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EDITED BY

JAMES PRINSEP, F. R. S.

SECRETARY OF THE ASIATIC SOCIETY OF BENGAL; HON. MEM. OF THE AS. SOC.
OF PARIS; COR. MEM. OF THE ZOOLOGICAL SOC. OF LONDON, AND OF THE
ROYAL SOCIETIES OF MARSEILLES AND CAEN; OF THE ACADEMY
OF NATURAL SCIENCES OF PHILADELPHIA; OF THE
PHILOSOPHICAL SOCIETY OF GENEVA; OF
THE ALBANY INSTITUTE, &c.

VOL. VII.—PART II.

**JULY TO DECEMBER,
1838.**

"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia* will commit their observations to writing, and send them to the Asiatic Society at Calcutta; it will languish, if such communications shall be long intermitted; and will die away, if they shall entirely cease."

SIR WM. JONES.

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THE ASIATIC SOCIETY.

No. 79.—July, 1838.

I.—Excursions to the Eastward. No. 1.

Extracts from the Journal of a Political Mission to the Rája of Ligor in Siam. By Capt. JAMES LOW, M. N. I. and M. A. T. C.

When the Burmese war broke out in 1824 I had the honor of being deputed by the honorable Mr. PHILLIPS, then at the head of the government of *Prince of Wales' Island* as envoy to the rája of *Ligor* with the view of obtaining some co-operation of the Siamese with the *Rangoon* expedition, and especially by means of a fleet of boats. It is unnecessary here to enter into political details; but it may be briefly remarked that the Mission returned after a tedious negotiation of three months without being able to effect all the objects contemplated. This was owing to the suspicious temper of the Siamese court, which could not for a long while credit that the British arms would finally prevail. At a subsequent period when aware of the mistake, this haughty and ambitious, yet politic court discovered that the dilatoriness of its councils had shut it out from any share in the conquered territories.

The schooner *Commerce* of 60 tons burden, Capt. CHEVERS, an American commander, was taken up for the conveyance of the Mission. A native officer with a party of sepoys formed the escort, and camp equipage was provided in case it might be wanted for a march overland.

We sailed on the 7th May, 1824, and proceeded up the *Keddah* coast. On the right, *Gunong Jerrei* the *Keddah* peak forms a very prominent feature of the coast. Its height is about 4000 feet*. It is

* By the Trigonometrical Survey made by Mr. WOORE of the navy its height is 3894 feet.

very steep where it faces the sea ; and here the streams of water which flow over the smooth dark granite rock, when struck by the sun's rays, appear like fleecy clouds wreathing the mountain.

The formation of this mountain is primary. The secondary and tertiary formations are not easily discoverable until we reach the small islands called the *Buntings*, which lie nearly opposite to it. At its base strata of laterite, and other conglomerates and accumulations of debris prevail. In the deep narrow valleys lying betwixt the shoulders of the mountain I observed tin ore of an excellent quality in the form of grains. The Chinese were making what they called a mine, which was merely a square excavation about thirty feet wide and from two to three feet deep. The ore was loosely deposited below quartz and schistose gravel.

Suspended from the ceiling of the smelting house were wooden models of all sorts of native arms and implements intended to charm away evil spirits.

Jerroi and *Cherrei*, by both of which appellatives this mountain is known to the Malays, are corruptions of the term *Srai* which was the ancient name of the *Keddah* country when entirely peopled by the Siamese race, about A. D. 1340. A commercial colony from the westward under a chief named MARRONG MAHAWANGSA which settled near the base of the mountain *Srai* was the cause of the country becoming a place of greater resort than before that event for traders from India. The above named chief changed the name of the country to *Keddah*, but the Siamese continue to call it *Srai* or *Chrai*. I shall have occasion in a subsequent paper to state some further particulars respecting the condition of this country in former times.

8th. Anchored off the mouth of the *Keddah* river. The anchorage is good in the north-east monsoon ; but in the south-west monsoon it is a disagreeable if not an unsafe one, the shore being a lee one and the swell heavy.

The Yokkabat, one of the Siamese government officers, came off to say that the governor would give me an audience next day. I accordingly waited on him at his *sala* or *thamoneeup* or hall of audience. PHRA PHAK DEE BARBERAP is a young man of about twenty years of age. He is an illegitimate son of the rāja of *Ligor* ; he entered the hall immediately on my arrival. He was preceded by two men carrying *dap deng* or swords of state. These are about five feet long and have red velvet scabbards. On the right and left were soldiers bearing *dap he* which are also swords of state having golden hilts. Princes in *Siam* have generally twenty sword-bearers on each side of them

when sitting in durbar. I bowed in the English fashion to the young chief and then sat down on a chair which had been placed for me six paces in front of the raised platform, on which he had seated himself with his legs crossed and supported by cushions. Behind me the native officer and havildar with their swords on, stood along with several other attendants. The Siamese interpreter to the Mission placed himself on the carpet at my feet. Close on the left squatted both the minister of the chief and also his interpreter. The object of this interview was to explain to the Siamese the nature and objects of the Burmese war, and to obtain permission to cross the Peninsula to *Ligor*. The chief positively refused to comply with the latter request until he had the sanction of his father.

The Mission therefore would proceed, I told him, up the coast in order to open a more speedy communication with the Ligoreans. The young governor smoked segars during the whole audience. The minister alluded to is a very fat man, and the uneasy, unnatural posture which etiquette compelled him to keep, gave him the appearance of a huge baboon, the resemblance being heightened by the manner in which, according to the Siamese fashion, his hair was brushed up in front.

The interpreter passed and repassed betwixt the chief and myself on his knees and elbows, a tedious and disgusting operation, but characteristic of the procrastinating nature of Siamese diplomacy.

The governor was naked from the waist upwards. His hair was short and his head uncovered.

The lower half of his person was clothed in a dress of silk and gold. This is the common dress in lower *Siam*, and the *rāja* of *Ligor* and his sons affect simplicity, partly it may be supposed through policy, and the fear of exciting the cupidity of the minions about the court of *Bankok*.

Many however of the inferior officers wear silk vests or tunics embroidered with gold or silver, and also long crape scarfs which they either use like cloaks, or wind round them as sashes. The favorite color for these last is black.

The town of *Keddah* stands on the south bank of the river, and consists of a single street of mean artap houses*. It is protected by a brick defence, comprising an area of about eighty yards by fifty. Within are the houses of the governor and his officers and soldiers. The wall of this work varies in height from eight to ten feet. Several large iron guns are mounted on the wall facing the river. There is no

* This term is given to the eastward to houses constructed of light materials and thatched with artap or nipah leaves.

ditch on this side and the space betwixt the foot of the wall and the river's bank is a gentle slope of a dozen yards. This fort, as the natives term it, could not withstand for a quarter of an hour an attack by a regular force.

Piles had been driven into the river below the town leaving only a narrow passage. In descending, the tide carried our boat against these, and it narrowly escaped being wedged in betwixt two of them.

11th. Set sail in the direction of *Sittool*, a small town on the bank of a river of the same name. Finding that it would delay us did we ascend this river we returned to the vessel. The bason into which it empties itself and which is formed by islands is very shallow. Proceeding along the coast the general aspect is monotonous. Here and there an open spot covered with long grass and interspersed with fine trees seems to give an earnest of cultivation. But a nearer approach dissolves the spell. In fact the cultivation on the *Keddah* coast, with a very few exceptions, does not begin until a distance of a mile or two from the sea.

I have in a former paper* described the *Lancavy Islands* and others adjacent to them, and shall therefore here omit that part of the journal which relates to them.

16th. Having encountered nothing but contrary winds we ran in for *Trang* harbour, but were forced to come to an anchor before reaching it, after having with great difficulty and hazard weathered two high limestone rocks which lie off the south end of *Pulo Tilibong*. There being no endurable cabin, the tents were got up and spread out so as to shelter us from the torrents of rain which fell during the night.

17th. Finding that no progress could be made, the boat was got out and I proceeded to the island to examine it. There was a very heavy swell and a double surf at the shore of the small bay on the south side of the island where we landed, and we narrowly escaped being swamped. The island is uninhabited, and had been deserted since the Burmese descent on *Junkceylon* in 1808; several droves of wild buffaloes were seen on a plain in the middle of the island. At these a few shots were fired without much effect. On returning to the Bay no boat could be found. At length the Arab who had been left in charge of it was discovered seated in moody silence below a tree. He significantly pointed to the surf, adding "*she lies there.*" As this was our only boat, and the *Commerce* was hull down, our case appeared somewhat desperate. Fortunately the rope attached to the anchor on shore held fast, and by help of this and the exertions of all hands after two hours hard work

* As. Res. Trans. Phys. class, part I. paper VI.

the boat was got on shore. It was full of sand and two of the planks were stove in. The jackets of the men were employed to close these apertures, and then by dint of constant baling our party reached the vessel in safety.

19th. Anchored in *Trang* harbour within bowshot of a small creek. The channel is narrow, and it deepens towards the anchorage at this creek which runs up into the east side of the island. This spot is about three miles distant from the guard house at the mouth of the *Trang* river, and about twelve from *Khoan Tani* the chief village of the district which also lies on the banks of the river.

Pulo Tilibong was formerly inhabited, but the wars of *Salang* which exposed it to Burman ravage scared the people away. On the sandy beach on the eastern side we found the remains of a stockade which had been constructed with shinbeans or roughly planed planks, about two or three inches in thickness, of the wood called by the Siamese *mai kheum*, and *khayè geam* by the Malays. These planks were about ten feet above the ground in height. This is a very hard and durable wood, and of a dark color. Although it had been exposed to the weather in this stockade for upwards of twelve years, it seemed to have only increased in hardness by age.

In a cave in a high rock which guards the northern entrance to the harbour, I discovered twelve human skulls placed in a row; they probably belonged to some of those men who had fallen in the wars just alluded to. This cave contains many fine stalactitical masses.

There is a channel betwixt the island of *Tilibong*, and the main shore which is generally used by the Chinese junks which go up from *Penang*. There is no safe channel for vessels from *Tilibong* harbour to the river's mouth. The harbour ends in a deep excavation of 9 feet, being merely the channel which is formed by that portion of the waters of the river which flow in this direction.

Trang is a thinly peopled district. About three thousand persons of both sexes may be taken as the utmost extent of the population.

The river and its adjacent shores are chiefly valuable to the Siamese on account of the facilities which both afford for boat building, and of some tin mines at the skirts of the hills. *Trang* river bears properly: only one embouchure although the maps represent it otherwise. Junks go up it for ten or twelve miles (by the course of the river). About six hours' rowing up it divides into two branches.

Khoan Tani is the chief village. Poultry and some other refreshments can be obtained. The finest kinds of fish swam at the mouth of the river and in the harbour.

The Chinese of *Penang* export from *Trang* tin, a little ivory (which is contraband,) bird's nest, hogs, poultry, and rice. A Chuliah or jaur Pakan* manages the rāja's mercantile transactions. The river is quite undefended. From *Khoan Tani Ligor* can be reached in seven stages†. Tigers abound on the route. Expresses are generally conveyed by parties of seven men, who make the best of their way without always keeping together, the strongest carrying the express last and leaving the weaker behind.

21st. About midday the *Than Palat* or superintendent of the district with his two colleagues came on board. They appeared under considerable alarm.

Letters were despatched by their assistance to their master at *Ligor*, for it was found that these men had less authority vested in them than the Governor of *Keddah* possessed. The apprehensions of an attack by the Burmese had not yet subsided here, and the news of the British having gone to war with that people gave evident satisfaction to these officers. The *Than Palat* observed, that although the Siamese and the Burmese had a common origin, and have now one religion in common, yet their minds never in any manner allied. The English, they observed, could easily accommodate themselves to Chinese and Siamese customs, because they eat the same kind of food. These men were well dressed in white silk crape vests, with short sleeves. The under dress was composed of chequered silk. They partook freely of wine and biscuit, and became soon so loquacious that some state secrets escaped them, or which they doubtless considered such, although in reality as regarded us amounting to nothing.

We left *Trang* on the 26th, and after encountering rainy and boisterous weather, rendered more annoying from the want of any decent accommodation on board, we reached *Junkceylon* on the 29th.

The harbour of this island is too well known to require a description here. There is neither village or hut on the beach, and at first sight a stranger might suppose that the island had been deserted. After searching about for some time in the boat for the *Therua* stream or creek, we observed a boat with natives in it close to the beach. On seeing us they took to flight although armed with muskets and other wea-

* The descendant of a Chuliah or *Coromandel* man and a Malay woman.

† 1 Tha cheen.

2 Don thamma praang.

3 Kroong mo-an.

4 Kassang.

5 Chong khan.

6 Chong,

7 Ligor,

} No population.

}

} Small villages.

pons. They were overtaken, and proved to be a party of Siamese. A shaven priest of BUDDHA kept the helm. Recovering from their alarm they shewed us the creek we were looking for. The opening into it through the mangrove trees is very narrow, and might be mistaken for a mere inequality in the general line of jangal. Although we had left the ship at sunrise, we did not reach *Tha Rúa* town until about sunset. This was owing to the narrowness of the stream which prevented oars being of any use. The heavy ship's boat was towed up by fixing a rope to trees ahead and hauling on it, and by the boatmen dragging it against the current ; they being at the same time up to the neck in water.

LOANY BAM PRONG the Siamese officer in charge of the island received me with much politeness and hospitality in his own house*. His wife, a stout good-humoured dame, of about thirty, immediately set to work in the kitchen to prepare me a supper or rather dinner. The kitchen was on the same floor with the apartment allotted to me, and I could perceive the whole process of cookery, which was certainly by no means of that description which could injure the appetite of any traveller of moderate expectations. The dinner, consisting of poultry, eggs and vegetables, was served up in clean China plates and cups, with spoons of china-ware ; custards, confections and fruits formed the second course. My host declined partaking of the viands. This was done out of respect, not prejudice ; for after I had dined, the dishes were removed to the next room, where he and his lady, who had cooked an additional dinner, dined. By this time the lower part of the house was full of people. But they behaved with much decorum. They all smoked cigars. The conversation was kept up betwixt the chief and me, accompanied by the flare of dammer torches until past midnight, and during it I could perceive that fealty to the emperor was a thing which lay very lightly on the heart of my companion. On our arrival the women were but scantily clothed, their busts being for the most part exposed. Next day, however, they all appeared, with the addition of the *phré*, which is a long piece of cloth, plain or variegated ; one end of it is put partly wound about the waist, and the remainder is brought over the left shoulder and then carried across the breast : they wore their hair short. The women bring water from the river in bamboos of ten or twelve feet long closed at one end. They carry them slightly inclined on their shoulders and place them upright against the walls of the houses. This plan is very

* Built in the usual light style of the country and only distinguishable from the cottages around it by being larger.

inconvenient, since the bamboo which is heavy must be lowered when water is required by any of the household. Joints of the bamboo are in general use for carrying water on a journey, and rice can be sufficiently boiled for food in a green one, without the latter splitting. We returned to the ship on the 31st, after presenting some trifling presents to the chief and his lady, amongst which was some wine and brandy for eye-water, as she was pleased to term it.

Salang is the Siamese name for this island. It seems to have been originally peopled by the *Thai* or Siamese race, who have not paid that attention to it which policy should have dictated, seeing that it possesses valuable tin mines and forms one of the keys to their coast. Its importance as regards British influence has been much exaggerated, and since the fall of *Tenasserim* and its occupation by British troops the island has become of hardly any political importance to us. It could easily be taken at any time if rendered necessary by war.

Salang or Junkceylon.

The most correct account perhaps extant of this island is that contained in "FORREST'S Voyage to the *Mergui Archipelago*." But since his time (about 1784) many changes have taken place, not by any means contributing to its prosperity.

Salang is 27* miles long by 10 at most in breadth, lying about E. S. E. and N. N. W. It is diversified by hill and dale. The hills are of moderate elevation, slope gradually, and are clothed with wood to their tops; while the levels are covered with grass and forest, excepting where cultivation has been carried on. Both the east and west coasts may be closely approached by large vessels, but the west being a lee shore the chief harbour has been chosen on the east side. A dangerous narrow passage only navigable by small prows separates the north point of the island from the main land, while the most southerly point is bold and rocky and difficult to clear unless the wind be quite favorable†.

The island abounds in streams, the principal of which is that which leads to *Thárooa* the residence of the governor.

The harbour is excellent, and it is covered by two islands in front, while a hill sufficiently high to give it the command of a great part of the harbour, juts boldly out from the main island.

* 25 miles according to HORSBURGH.

† When returning from *Mergui* in the latter part of 1825, the vessel I was in was forced by the wind and currents so close on this point, that had the last tack she made not weathered it she must have been wrecked: we were within a cable's length of the rocks.

Junkceylon was long the field on which the Siamese and Burmans decided their claims to supremacy. This circumstance is alone sufficient to account for the desolate condition it has been reduced to. But that the Siamese have yet possession of it up to the period of the war betwixt the British and Burmese is more than might have been expected from the relative power of the contending parties, for the Burmans had long before driven the Siamese out of *Mergui* and *Tavoy**.

The last invasion happened about 1808 headed by a Burman general.

The troops were collected in *Martaban*, *Tavoy* and *Mergui* and amounted about 12,000 men. They were successful at first, but when they endeavoured to retreat with their booty and prisoners they were pursued by the Siamese and the *Keddah* Malays who were auxiliaries; numbers were slain, others were shipwrecked, and only about one half are supposed to have returned to *Tenasserim*.

The population of *Salang* is only now about 5,000 souls, which is not half of that rated by FORREST. *Tharooa* contained in this time eighty houses; there were only 18 in it when visited by me in 1824.

The Siamese are anxious to encourage the settlement of their own race here. But the genius of their government is better suited to retard than to facilitate the increase of the species. The Siamese court is too bigoted to that stumbling-block to nations,—custom, to perceive that artificial means which bear no reference to the first natural and simple maxims of political science can never be effectually employed to increase the population of a country.

The kings of *Siam* have been taught to look on their subjects as property which may be managed as they like, and they have made them slaves, because they can then best administer to their own luxury, avarice, and ambition. The minds of the Siamese are therefore depressed; no rank is perfectly hereditary, no private property however arduously acquired is safe, every man in the empire is liable to be forced from his family to serve in the army for years without pay, and life itself is often taken away for actions which even under many despotisms, and certainly under no reasonably free condition of society, would be termed faults.

* The Siamese affirm that they conquered the island from the Burmese in 1916 of BUDDHA, A. D. 1373. The expedition was commanded by Prince CHAU NAI THA of *Ligor* in person.

They had to retake it from the Burmese in 1786, when four thousand of the latter nation were killed and made prisoners. The Siamese were compelled to cede *Tavoy* and *Mergui* to the Burmese in 1793.

To fill up the vacant spaces in their population the Siamese were constantly in the habits of kidnapping their neighbours the Peguers and Burmans ; frequently translating the population of whole villages at once. Then having planted them like exotics on a new soil they vainly supposed that strength was added to the state.

They did not leave off this practice on the *Tenasserim* frontier until long subsequent to the occupation of *Tavoy* and *Mergui* by the British. They have derived one advantage, yet a dubious one, from this system. It is the organization of a body of mercenary Peguan troops. Were not the families of these men strictly retained as hostages they could not for a moment be depended upon.

The population of *Salang* is almost exclusively Siamese ; the exceptions being Chinese.

The men are stout, and well enough proportioned ; and the women although not handsome, have fair complexions.

There are a few priests on the island and a pagoda. These priests or *chankoo* do not seem to be fed so well as those of their sect generally are in *Siam* ; for several were observed returning from fishing with nets, an occupation at variance with the rules of the order.

On the east side of the island at *Lèm phra chaü* point, there are rocks which the Siamese affirm have been hewn into the figures of a dog and a crow. Some pieces of rocks perhaps do bear distant resemblances to such figures*. However it was not in my power to go to the place.

Opposite to this point they also imagine that they can distinguish beneath the wave on a rock a *Rà-è teen*, or, impression of the divine foot of BUDDHA.

The worship^a of the dog may be traced to remote antiquity. In *Egypt* it was prevalent, and in BRUCE's Travels we find that the *Kowas* or watch dog of the skies is venerated in *Abyssinia*, not only was he raised by the antients to a conspicuous station in the heavens, but he was placed as the deep mouthed guardian of the infernal regions. In Hindu and Siamese mythology a portion of hell is given over to his power.

This singular species of worship was once openly professed by many Indo-chinese tribes, but now slight remnants of it alone remain. Thus amongst the Siamese there are many persons who on undertaking a journey or upon any unusual occasion invoke the great dog to avert

* But on such vague reports I have frequently been induced to walk many miles in the hope of finding statues, inscriptions, &c. and have generally been quite disappointed.

all evil from them. The people of *Salang* had statues of this dog, the last of which was it is said carried off by some Malays. There is little doubt that the Malays also were once infected by this superstition, and it is worthy of notice that although so many centuries have elapsed since they were converted to Muhammadanism, yet it is curious to observe the large number of their former superstitious observances which they still retain and cling to, although denounced by MUHAMMAD.

The animals in *Junkceylon* are buffaloes, hogs, and deer. There are no wild elephants, but leopards are rather numerous in the wilder parts; common poultry was procured, but a large supply must not be expected here.

The situation of *Junkceylon* is sufficiently far to the northward of the line to give it all the advantages which the two regular monsoons afford, without subjecting it to the greatest violence of either.

Its climate is temperate, and the air is refreshed even in the dry season by copious showers. From June until November may be deemed the rainy season. The air is then cooled by the dry northeast monsoon. From February to June the weather is warmest. The soil of the island is various—clayey within the mangrove belt on the east side, sandy along the open beach on the west, and where hilly composed of the debris of the granite rock and vegetable matter. The extensive flats and gentle slopes are fitted for most tropical production, and the lower ranges of hills seem peculiarly adapted to the cultivation of indigo and coffee.

The island might not perhaps furnish grain for a crowded population, but its products would probably ensure a supply to it, under such a state from other quarters.

Many of the hills near the east shore seem to have been once cultivated to their tops. The harbour and creeks swarm with excellent fish and the shores with oysters.

Salang yields a very scanty revenue to its present possessors, but under good regulations it might be rendered more valuable. The revenue may perhaps be thus computed.

Yearly duties arising on sales of tin,	Drs. 3000
Customs and profits arising from the services } of the subject, }	„ 2000

Sps. Drs. 5000

Tin is the product which gives to this island its chief value, for however neglected the mines may now be from deficiency of miners, we find in Capt. FORREST's account that they yielded in his time about 500

tons of tin yearly. It may however, be surmised that several of the best mines have been pretty well exhausted.

This quantity agreeably to a calculation made by me when visiting the smelting-house, and which will be noticed presently, must have afforded to the king and the contractor of *Siam* a clear annual profit of 76,224 Spanish dollars, prices being then from 60 to 65 dollars per bahar. It is however supposed that the above quantity did not form the maximum of productiveness, and that with the long island of *Pulo Panjang*, containing, (even now) unwrought tin veins and beds of ore, *Salang* could have been made and perhaps might still be made to yield a much larger supply. The tin of *Junkceylon* is now carried to *Phoonga* where it is either sold to *Penang* traders or despatched across the peninsula for the *Siam* market.

The following remarks will be found equally applicable to the tin mining and smelting operations of *Salang* and *Phoonga*.

The Chinese are the only people employed by the Siamese in the smelting of the ore at their various tin mines, and the former generally enter into a contract for a period of a year, at a stipulated rate.

The charges for mining, smelting, &c. stand thus for *one bahar**.

1. Price paid at the smelting house for ore,.....	19	20
2. Charges for furnace and 6 men at $\frac{1}{2}$ dr. per day,	1	50
	<hr/>	
	Prime cost,..	20 70
3. The king takes at first,	24	0
4. Ditto ditto ditto on the sale,.....	2	0
	<hr/>	
		26 0
	<hr/>	
Total cost to the smelter†, Drs.....		46 70

The operation of mining is quite speculative, but on this account it has greater charms for the natives who require excitation of mind to disturb their indolent habits.

They dig pits from the depth of 10 to 100 feet. The ore is found either in a gritty form, or imbedded in a quartzose gangue. They are contented with the produce which the single shaft yields them, and rarely venture to mine laterally. This ore is then broken and washed. Although there are few parts of the island which do not contain ore,

* A bahar contains about 466 lbs. avoirdupois, so that 5 tons are equal to 24 bahars and 16 lbs.

† Now, 1837, the average price of tin in the Straits is about 48 dollars per bahar. Consequently unless the duty should be greatly reduced the mines must be abandoned.

yet the mines at the places noted below* are most productive as I was informed.

The furnace used by the Chinese is about three feet high and one foot and a half in diameter at top, and nearly the same below.

Alternate layers of ore and charcoal are put into it, and pump bellows are kept incessantly at work during four days *less* one night; after ten or twelve hours blowing, the tin begins to run off. The coke is extracted at intervals and is afterwards again subjected to the action of the furnace.

The produce during the above period is from $5\frac{1}{2}$ to 6 bahars.

They then take a day's respite.

It has been stated that the government charges, on tin, an export duty of about two dollars per bahar. This, however, is only the case when return is made in specie. If in goods and provided the quantity purchased exceeds 20 bahars, the duty is 125 dollars, which is not increased although the transaction should be carried to a much larger amount. The contractor, or more properly agent receives one per cent. on the sales when the king does not direct the governor to make a specific contract, and the inferior officers of government and the chief himself must be propitiated by presents.

Eight per cent. is charged on the bartering of goods.

The Siamese possess several small ports northward of *Junkceylon*, These are *now* only visited by petty trading native prows†.

Although *Junkceylon* is under the *Phoonga* government yet being a well known island and one where a considerable trade centered before the British got settlements to the eastward, I have preferred treating it separately.

Phoonga.

On the 1st June, 1824, our captain at my request weighed and stood out of *Junkceylon* harbour.

Many majestic rocks (laid down confusedly in some maps under the name *Tower*), were the marks by which we steered, as no one on board

* *Pitlong Takre-ün, Sappam, Ban ke rim, Ban dawn, Ban na nai, Ban Saphan, Ban nayang, Ban sako, Ban thoongyang, Kamra, Kitoong, Chaloong, Pakkis, Tillong* near *Papra*, and *Phoklar*. The tin ore smelted at *Phoonga* is brought from the following places lying on the coast of *Tenasserim* above *Papra, Takoa pa, Powung*, and *Kra*. The ores from these places are considered inferior to the *Salang* ore.

† These places beginning from *Junkceylon* and at *Papra* are *Naikeemo, Phoklewe, Bandaun, Bangkhree* on a small river, (the *Bangir* or *Baniger* of the maps,) *Nashooee, Takoa Kong, Bandala, Bangklok, Pré Koosoom, Kraé, Pook-hak Takoope, Rendong*.

had ever been in this bay. These rocks from their shapes are called by the Siamese the *Yot Phoonga*, or pyramids of *Phoonga*.

Just as we approached the rugged chain alluded to, we were much surprised to observe a handsome brig lying at anchor; this harbour being if not absolutely unknown to European traders is now but very rarely visited by any. She turned out to be an American merchantman, "the *Hope* of Boston," with a small crew of eight or ten men. The commander was ashore in his whale boat, and had left his crew under a mate; when we met him afterwards he told us that his crew had taken us for a *pirate* (although we had English colors up), and had nearly given us a *salute*, when passing within half pistol shot, with all their guns and fire-arms. To this speech our captain made a suitable reply. He too, although an American himself and one too in heart, coolly said, that it was most lucky for the *Hope of Boston* that she had kept quiet, since she must soon have become a legal prize to his brig, defended as she was by four six pounders and a party of twenty sepoy, besides lascars and officers. This American trader had many muskets for sale on board, but the Siamese did not seem pleased with their quality. Indeed, they were of a most ordinary description, being hooped round the barrels and stocks, and not resting at the half cock. It is not easy to impose any spurious article of trade on the Siamese, especially fire-arms; but they will exchange their tin for good ones, although luckily not so much to the advantage of the European or American trader as to render it an object of much importance to him to bring out large supplies.

Our brig having been anchored about a mile off *Phoonga* river, I decided to go up at once to the town, being aware that should the Siamese governor take alarm he might excuse himself from allowing me to visit the town.

I therefore immediately left the ship with an escort of ten sepoy and rowed up the river. It was found to flow through a level country covered with mangroves and other jungle from which we were saluted by the chatterings of tribes of monkeys.

The tide being partly against us we did not reach the opening to the cultivated plain until after six hours' rowing. Here some Chinese junks were observed at anchor*, and we were hailed from the custom house and told to stop. On pretence, however, of not understanding them we pushed up to the town. The people were apparently under considerable alarm, and we were afterwards informed that the governor's son, who was acting in his father's absence, had ordered the alarm

* From 50 to 60 tons burden.

drum to be beat on learning from the American commander, who had got up before us, that a boat manned by British sepoy was on its way to the town. Having reached an open place close to the governor's house, and supposing from the confusion observable in the crowd on shore, that our visit might be construed perhaps as a hostile one, I directed the boat to be moored, and that no one should presume to quit her without leave.

I then landed and went, accompanied by a native sepoy officer, and four privates with side-arms only, to pay my respects to the governor's son.

He received me with much politeness, but under manifest restraint and uneasiness in a hall, in the midst of which was a raised platform railed in. On this platform mats, carpets, and cushions were laid.

I accommodated myself there being no chairs as well as might be to the cross-legged position in which the chief reclined. This young man entrusted the first part of the conversation to his father's colleague, and interpreter, who were seated before him. On looking round I was at a loss to conjecture the cause of the apprehension shewn by him, for there were about an hundred armed men in the hall, their weapons chiefly spears and swords. To calm the young chief I explained to him that my visit was of a friendly kind, and to obtain some supplies of which we were in need; and I told him that next day when fewer persons would be present we might if he chose have a long interview. Confections were brought in upon brass trays; and I then returned to the bank of the river where a house had been prepared by the chief's people for my reception.

It was in the ordinary style of the country constructed of bamboos and leaves, and decorated inside with qhintz hangings and couches, mats and carpets.

I had scarcely occupied this apartment when an ample dinner arrived from the governor's kitchen. It was served up on high metal trays with three and four shelves each, and consisted of pork variously prepared, roasted and stewed ducks and fowls, fish, hard-boiled eggs, plain and seasoned rice and vegetables. The desert was composed of plain and preserved fruits, custards, and confections.

The seasonings to their dishes were pepper and spices, balachong or caviare-oil, salt, and limes. Every part, almost, of an animal is eaten. When a buffalo is killed the common Siamese will prepare the skin for food by scorching it, and then beating, washing and boiling it: after these operations it is cut into thin slices and dressed. Game of all kinds, both birds and beasts, abound in the country, and all of the

former, excepting vultures, hawks, and owls, and all of the latter, except beasts of prey, are used as food.

The Siamese, like the Chinese, are great gourmands when they can afford to be so, but while the latter prefer pork to every other sort of food, the Siamese prefer venison and ducks. Some *Lau* (*samchoo* of the Chinese), an ardent spirit, formed part of this entertainment.

Crowds came to gaze at us until it became dark, when the sound of the bugle helped to scare them away.

The governor's interpreter, a native of *Coromandel*, remained until late, no doubt to sift my real intention in entering the place. With the adroitness of his tribe* he proffered whatever his master's house could afford, not sparing the inmates of the seraglio! His people in the interim were busied in discovering what profit he could make out of the two stranger vessels.

PHRA PHAK DEE PHO THAU the young chief received me at his house next day.

I informed him that I was proceeding on a Siamese mission from *Penang*, and that I was happy of the opportunity chance had given me of informing him that the British had gone to war with the ancient enemies of *Siam*, the Burmans. His countenance instantly brightened, and with animation he proffered his elephants and attendants to convey me immediately across the peninsula†.

It was with real regret that the terms of my instructions did not authorize my proceeding to the capital, and had even a latitude in this instance been excusable, I was under obligations to enter into conferences with the rāja of *Ligor*, which might have prevented my availing myself of it. But the readiness, with which the route across the peninsula was opened to me contrasted well with the suspicious temper of the wary chiefs of the more wily *Ligorian*.

The day after this visit I went to take leave of my hospitable entertainer previous to embarking. Having before expressed a desire to see a Siamese theatrical exhibition, I was gratified on being told that the actors and musicians were ready to commence. We proceeded to a thatched house called the *Rong Lakhanor* theatre.

The piece under performance was the *Ramakean*, a free version of the Hindu heroic poem *Rāmāyan*. This kind of dramatic exhibition is termed *Len khon*.

* Called Chulias to the eastward of the Bay.

† First, *Penang* where the *Ban Don* and *Chaiya* rivers join three stages on one elephant; thence down the *Chaiya* river in boats three stages to the sea.

From *Phoonga* to *Tā Thong* a dependency of *Ligor* on a river famous for the boats built on it, is a journey of four days.

Phra Ram (or *Sri Rama*) and his ape general *Houlaman* (or *Hunuman*) attended by his army of apes appear in their proper shapes on the stage. On the right was a throne for the king, and on the left an elevated space for *Thotsakan* or the "ten-headed," who was the Hindu *Ravan* or tyrant of *Ceylon*. The tyrant appears attended by his queen and encompassed by his attendants.

As masks are worn in this department of the Siamese drama the actors do not speak, but merely adapt their gesticulation to what is read by the prompter, or speaker rather, placed behind screens. The dialogue is frequently lively, but being in verse has too often a monotonous effect on the ear. A band of music was ready to supply breaks in the action and to accompany certain battle, and other scenes.

This band consisted of drums, trumpets, flutes, the metallic sticcado, musical trough, and kettle drums, cymbals and gongs; when the actresses, or, as they then happened to be, boys in girl's clothes, danced, they kept excellent time to the music, and I was particularly struck with the greater ease and elegance which the Siamese dancers possess over those of any people in Hindustan. Here sprightly figures rather prevailed, while in India it requires a dancing girl to have a very great share of beauty to prevent the spectator from becoming speedily relieved by sleep from her display of studied gesture and cramped action.

The dresses of the dramatis personæ seemed appropriate, but perhaps rather gaudy.

PHRA RAM had a green mask, and *SOOKKREEP* (*Soogriva*) his minister a golden one. The tail of the general *Houlaman* becomes during a skirmish the prize of the opposite party, to the infinite diversion of the audience. The policy of the Siamese government leads it to take advantage of the good nature of its subjects, and in gratuitously admitting them to such amusements, makes them willing to forget for awhile in mirth and song the miseries they endure from the unmitigated tension of its rule*.

We left the theatre much gratified at the novelty of the whole performance, and on my return home I found that a sumptuous dinner had been sent by the young chief for myself and party. But perhaps he had not considered that Mussulmans and Hindus would not dare to touch the viands he had sent. No doubt they were discussed by his own people afterwards.

The dinner consisted of the following dishes: a half grown pig roasted whole, several ducks and fowls stewed, hashed and baked, stews of various kinds, a large tray of preserved fruits, including dorian, &c. &c.

* Under the head poetry will be found some further notices on the subject.

tards and fresh fruits; neither coffee, tea, milk or butter seem to enter into the common fare of these people. Butter they never make; milk is seldom used in its plain state; and tea is a luxury confined to the chiefs principally. They dress their food with hogs' lard.

The chief positively refused to receive any present from me for his attentions, but I sent some suitable ones to his father on a subsequent occasion.

Phoonga river.

The east branch is said to be the largest, but the west branch is that most frequented. I was prevented from surveying the former by our accidentally missing our direction in returning, and pursuing the branch by which we had ascended. The windings and creeks of these rivers are so intricate that it requires a long acquaintance with them to render them familiar. The sketches of the valley and the pyramids will shew better than description can the nature of the country. *Phoonga* lies in an oblong plain or valley formed by two ranges of rocky hills which approach each other very closely at the north end, but less so on the south. The outlet to the north is therefore very narrow.

The river enters through this opening, and then winding prettily down the valley at length enters a tangled forest of mangroves and other trees, amongst which it finds its way to the sea.

The influence of the tide extends higher than to *Phoonga*, but at low water a ship's boat cannot well ascend beyond the place where we landed close on the town.

Its breadth, or rather the breadth of its bed opposite the town, varies considerably but may be stated on an average at thirty yards.

Its banks on the sides opposed to the force of the current, especially on that towards the town, are steep, and in some places ten feet high, but at and below the custom house they are low and covered at high tide.

The valley is about three miles in its extreme length, but the breadth is not more than two miles at the widest part, and the average may be given at three quarters of a mile.

The soil is chiefly a clay mixed with a reddish earth, and seems fertile. The greatest part of the valley is occupied by cottages with gardens attached, the rest by rice fields and pasture ground for buffaloes and a few oxen.

Fruits are very plentiful, especially the dorian. They were in season when we were there, and every house having a supply, the air was most strongly *perfumed*.

The scenery is peculiar and picturesque, and were the banks of the

river dressed and improved would be highly so. The towering rocks, somewhat fined down and softened in their rude features by the shrubs which cling to them even where overhanging their bases, produce an agreeable contrast to the mildness of the landscape below. In one place on the east side a chalky cliff obtrudes itself; I attribute the chalky appearance to the agarie mineral, which seems to be abundant in these rocks, and which oozing from their crevices produces this singular effect. The river itself washes the base of the limestone precipices lower down which are seen to great advantage while sailing up.

The dip of the strata of the most northerly of this range was to the south, but behind the town on the west side is a rock the strata of which are regular and horizontal.

The climate is rather warm during midday, but the mornings and nights are remarkably cool. The sea breeze reaches the town sometimes, when it blows strongly.

The town does not consist of more than 70 houses, as the population is found principally in detached cottages: about 30 of the above number belong to Chinese settlers. Their houses are large and convenient, and are regularly built so as to form a street. The house of the chief is a little larger than the rest, but has scarcely any exterior decoration and is formed of wood and other light materials. The hall is of wood, carved in some places. These are inclosed by a palisade of planks and stakes.

On the south of the chief's residence is the Chinese tin smelting-house where one furnace was employed.

From such information as was collected by me there, it would appear that the population, independent of Malays, of this place may be estimated at six or seven thousand souls. There are about six hundred active Chinese in this number. Two thirds of these are *Macao* men, who are considered by the natives both here and at *Penang* as the most troublesome class of Chinese emigrants. Several hundreds of Malays are interspersed in the creeks about the mouth of the river. The Siamese do not permit many of them to stay near the town.

A great portion of this population is employed during the dry season, which is half the year, at the tin mines. They return during the other months to cultivate rice.

The chief sends as many Siamese to the mines as he pleases, or can dispense with, and while there they receive provisions *only*. The ore which they dig is sold to the Chinese contractor, and the profit of it goes to the chief. The ore is brought down either on elephants or in canoes, which can find their way two or three days up beyond *Phoonga*.

The Chinese miners, however, are not taxed. Indeed the Chinese always enjoy privileges under the Siamese government, which are denied to the natural subject. They are exempted from the duty imposed on every Siamese of serving the state when called on, either in the capacity of soldiers, artisans, or day labourers, and they are left at more liberty to enjoy what their industry produces than the native is.

The reason is obvious :—the Chinese, independent of their belonging to the dominant nation to which the Siamese pay tribute, are a more intelligent, ingenious and laborious race than the Siamese, to whom also they have the art to render themselves absolutely necessary, and as the religious institutions of both people are free from the unsocial restrictions of caste, they assimilate easily together. We may likewise suppose that the Siamese would not like to irritate a class of men who are so numerous in all their towns, and who have come from a country the supremacy, as just observed, of which ever Indo-Chinese nations they acknowledge.

Although the chief of *Phoonga* takes advantage of the power given him and enriches himself at the expense of his subjects, yet his government is not so oppressive as that of the *rāja* of *Ligor*. His people also are more attached to him, than those of *Ligor* to the latter, or in other words do not hate him so violently as the Ligorians hate their prince. The difference shewed itself in one instance. In the *rāja's* country every article supplied for my table was extorted from his subjects, but at *Phoonga*, the chief bought out of the bazar all the provisions &c, he sent to me.

The females at *Phoonga* secluded themselves more than those at *Sakang* did, which I attributed to their own modesty, for jealousy is not a characteristic of the men in *Siam*. Women in this country are allowed much freedom ; but it may be questioned whether they would not willingly part with a large portion of it to get rid of the drudgery it entails. The obligation which the men lie under to serve the state during a certain number of months in a year according to circumstances, throws the labor which they ought to perform on the shoulders of the women. These are therefore driven to the necessity of subsisting themselves during the absence of their husbands ; they prepare the rice-fields, plant vegetables, and attend to the loom, or to keeping of small bazars.

The governor of *Phoonga* has two associates. His revenue is derived from the available labor of his own private trade, and perquisites derivable from transactions of foreign traders at his port. He has three China junks which trade to *Penang* ; these carry to that island

tin, rice, and small articles of native exportation, and return with cloth, chintzes, glass ware and other manufactures.

He pays no regular sum to the emperor, but at the expiration of every three or four years he sends, or takes a valuable present to him. The emperor of course receives all the profits that accrue from the sale of tin, the governor making his on the *ore* sold to the smelter.

Phoonga swarms with priests. They have four monasteries, but no temple deserving of notice. I visited the principal *Wat* or monastery early one morning. The superior, a man of eighty years of age by his own account, received me very politely. He seemed to think it requisite to account for the mean appearance of their sacred edifices, by observing that the materials had been collected for the constructing of others, but that the constant dread they were in of Burman invasion prevented them from carrying their intentions into execution. He then complained of a disease to which he was subject and asked me for some medicines. His complaint however being the irremediable one of old age, consolation was the only relief which could be offered.

The Siamese are very fond of European medicines, and like several eastern nations fancy that every white man is a physician. This convent seemed to be a hospital for dogs, which from the smallest to the largest size overspread the court, scarcely leaving room to walk. The Siamese are forbidden to destroy life, which may account for this preposterous kindness. From what I observed it would appear that in *Phoonga* there is at least one priest for the cure of every hundred souls! But the poor people do not benefit much by their advice. If they assist in daily filling the brass jar or *Bâat* which the *Chaukoo* carries about to receive contributions, and make a few periodical offerings at the shrine of *Phra Phoet* or Buddha, which are afterwards transferred to the houses of the priests, they fancy they have amply fulfilled the duties of their religion; and leave the priest to repay themselves by prayers offered up either for success, or to avert some expected calamity. The priests here had some Bali books which few of them comprehended; most of them can read such with about as much advantage to themselves as the generality of Mussulmans in Hindustan do the Koran.

Refreshments can be had here on reasonable terms, such as poultry, hogs and fruits.

They have a few cattle (bovine) but they were unwilling to dispose of them.

They have many tame elephants. The chief gave me the use of his while there, and also of a small pony called a *horse* which he had got from *Penang*.

The *exports** and *imports* at *Phoonga* may be thus stated.

Exports.—Deebook or tin, 600 bahars, and of which an indefinite number of bahars are sent to *Siam*.

2. Kra tau or tortoiseshell, which is brought from the *Lancavies* and other islands in small quantity.

3. Rang nok or edible birds' nests.

4. Nga chääng, ivory.

5. Khau san, rice.

Imports.—Fine English long cloth (white) about 80 cubits long and 2 or $2\frac{1}{2}$ broad.

2. Superfine scarlet broad cloth.

3. English chintzes, 7 cubits long, 2 cubits and 8 inches broad.

4. Bengal ditto.

5. Ditto white long cloth 40 cubits long, 2 cubits and 3 inches broad.

6. Baftas, 24 cubits long, 2 cubits and $1\frac{1}{2}$ inches broad.

7. Madras moreis, 18 ditto long, 2 and 8 inches broad.

8. Nagore gaga moreis, 70 cubits long, 2 cubits $2\frac{1}{2}$ inches broad.

9. Handkerchiefs 8 to a piece.

10. Carpets.

11. Bengal velvets 24 cubits long, or 40 cubits long, 2 cubits broad with border.

12. Occasionally a box or two of opium can be sold here; the sale of this article may be increased by improper means since it is forbidden to Siamese.

13. Chrystal ware, cutlery, &c.

These exports and imports are applicable to other Siamese ports on this coast. The common duties on mercantile transactions are here eight per cent. besides the native agent's fees which are one per cent. (although he will try to charge two or more); besides if bales of goods are brought separately on shore the chief claims on their being opened one piece of the goods contained in each. If many bales are opened at once then the charge is the same as if only one had been opened. This regulation is perhaps to induce the merchant to bring his goods quickly on shore. If elephants are sold the agent receives $2\frac{1}{2}$ per cent.

In small transactions not exceeding five or six hundred dollars, duties are not exacted. The chief since I was at *Phoonga* has shewn a disposition to diminish these duties to encourage trade with *Penang*.

The chief and his associates together with inferior officers expect

* Deeboak, is properly a generic term for metals, but here *tin* is hardly known by any other name. *Takoa* is the specific appellation.

presents after the transactions have closed. But it will be to the trader's advantage to make a handsome present in the first instance.

In all Siamese ports the foreign trader must lay his account with experiencing vexatious delays, and trouble arising perhaps more out of the complicated nature of the forms and charges than from their being actually burdensome.

Rice is sold here at the rate of twelve gantangs per Spanish dollar, but both at *Salang* and at this port it is of an inferior quality to that at *Keddah*. Their mode of preparing it for the market is also calculated to diminish its value. The grains are seldom whole and for the most part broken into crumbs. They cultivate all along the coast large quantities of the *Khau Neeau* of the Siamese, or Malayan *braspooloot* or *Oryza glutinosa* of ROXB. which is well adapted for the culinary purposes of the natives, particularly for confections.

We returned to *Trang* on the 7th June, and having fired a gun, the signal agreed on betwixt the Siamese chiefs and me, three envoys who had just arrived from *Ligor* came on board. The head envoy KHOON AKSON, I had known at *Penang*. These men after a conversation which lasted for four hours set off for *Ligor*. They said they had travelled in coming day and night, on their elephants, and had accomplished the journey from *Ligor* in three days and *one* night. The Siamese compute journeys by nights. Runners can perform it in four days easily.

18th June. The mission debarked on a high neck of land lying on the west bank of the river. The tents were pitched close to the temporary house which had been erected for myself by the *rāja's* people. The schooner was now despatched with letters to *Penang*. Exercise was enjoined to the escort and people not only to keep them in health, but on the alert, as the temper of the Siamese had not been perfectly ascertained. Indeed the secretary to the government at *Penang* acquainted me by a secret despatch that people from *Ligor* had informed him that it had been debated at *Ligor* whether the mission should be cut off either by force or by poison. But I put little faith in this report as I discovered that the principal reason why the Ligorians had neither allowed the mission to proceed to *Ligor*, or had come down in person to receive it, was his having just before been placed in communication with two colleagues who had arrived from *Bankok* to watch his acts. The reported danger appeared to me a fabrication of the *Keddah* people; and small as our escort was, the party of one hundred armed men who had been sent to keep a look out on us, would have been easily disposed of in case of treachery appearing. These

men had a few muskets and swords. They practised singly occasionally at a mark, using a rest, and that very fairly. When they saw the sepoys also practising, but firing balls by sections, the novelty of the exhibition seemed to have a due effect and deterred them from any future display of *their drill*.

24th. Until this date we had boisterous weather, volumes of clouds rolling in from the sea and partly breaking in showers in their passage to the hills. About eleven o'clock of this day twenty boats were descried descending the river. These dropped anchor close to our camp but kept a perfect silence, and the people in them would not answer our questions. This proved to be the advance of a fleet escorting the young *rāja* of *Ligor* who had been sent to meet me. In about an hour afterwards the sound of kettle drums announced the young chief's approach. The boat of the latter occupied the centre along with eight others, and the stern was covered by a canopy like a carriage hood. About twenty more boats were divided on the right and left wings.

The large kettle drum in the centre one, the privileged instrument of a governor of the first rank, was now struck louder and louder, and at every pause the crews of all the boats shouted at the full extent of their voices. The right centre boats were each manned by twenty sailors or soldiers (for the Siamese make hardly any distinction betwixt these two classes) dressed in coarse red cloth jackets, and the boats on the flanks had similar complements of men, but these wore blue cloth jackets. In general red is the color used by the near attendants on, or guard of the king and his great officers; common soldiers, if they do wear any upper garments, which is not very often the case, have them of dark colored woollen or cotton cloth. The chief, being a mere child of about nine years of age, was accompanied by several nursery female attendants to take care of his person and cook his food. This boy was addressed by his followers by the titles of *Boot* [*putra* or king's son] and *chao nooe*, the little lord*. He was carried from the landing-place to the reception hall in a handsome litter, borne on men's shoulders by means of four poles like the *Tellicherry* tonjon of India. The whole of his men who had landed, being 300, then arranged themselves in three lines, one line within the open verandah of the building and two without, and in the peculiar attitude of their nation. About one hundred of these men had muskets without bayonets, the use of this last weapon being quite disregarded by the Siamese. The rest had long swords. About one-half of the whole number had triangular woollen cloth caps, the rest were uncovered. The whole were in fact

* He has since [1837] become a courtier at *Bangkok* the capital of *Siam*.

squatted with their legs tucked under them. The musketeers with their muskets held up in front the butt resting on the ground; the others with their swords sloped.

Shortly after the arrival of this youthful diplomatist I proceeded to visit him. The escort drew up in front of the hall with ordered arms, and after exchanging my bow with the *Bootha* I sat down in a chair which his people had purposely brought. The principal men who had come with him to negotiate for him occupied chairs on my right and left. *Bootha* was richly dressed in a fully embroidered satin or silk *phá yok*. This article of dress closely resembles the Malayan sarong and it is worn either with or without trousers underneath it. Upwards from the waist his body was naked with the exception of several massive gold chains, which with their pendent jewels, seemed almost to weigh him down; he wore handsome golden bracelets and anklets, and he had many valuable diamond and other kinds of rings on his fingers. The crown of his shaven head was surmounted by a skull cap of gold filagree of handsome workmanship. This covering is called *mongkoot* which is a Bali word signifying a crown, and which is applied in historical works to denote a diadem.

So impatient was the boy to see the sepoys perform their exercise, that despite his council of grave men, and before other business could be begun his curiosity required to be satisfied. The crouching troops of the Ligorian had thus an opportunity of witnessing, and with manifest surprise, the precision which discipline bestows. It is doubtful if a Siamese soldier can hold himself erect. A slavish submission to their rulers has physically affected the whole of the male population, and a slinking, slouching gait is their most prominent outward characteristic.

After the conference I presented the youth with a few articles of British manufacture and two globes, (celestial and terrestrial.) He was very desirous to learn the use of these last, but there was no time for this operation. The Siamese are pretty expert according to their own fashion at map-making, although their geographical ideas do not wander far to the south or west of *Siam*. Some of their plans may be reduced to some degree of consistency and precision by adapting a scale of time to them, as the Siamese carefully note the time occupied in travelling from place to place.

After the conference *Bootha* shook me warmly by the hand, and took his departure in the same order as he had arrived.

It is needless here to enter into a detail of the conferences which took place. It was proved that the Ligorian would not adventure on his own responsibility to side with the British against the Burmese, and as

I saw that the time would be gone by, wherein co-operation could be useful before the fiat of the government of *Siam* could be obtained; and not deeming it prudent to act any further lest that haughty court should consider a compliance with the proposition which had been made to it as conferring an obligation, I returned with the mission to *Penang*.

Penang, 1824. *Revised*, 1837.

II.—*Epitome of the Grammars of the Brahuiky, the Balochky and the Panjābi languages, with Vocabularies of the Baraky, the Pashi, the Laghmāni, the Cashgari, the Teerhai, and the Deer Dialects. By Lieut. R. LEECH, Bombay Engineers, Assistant on a Mission to Kābul.*

2.—GRAMMAR OF THE BALOCHKY LANGUAGE.

This language is spoken throughout all those parts of the country called *Balochisthān*, that are either independent or owe such fealty only to the rulers of the plain, as does not bring them down from their hills for a long enough time to have their language corrupted into *Jathkt*, by which name they designate the *Sindhī*.

Alphabet.

The peculiarity consists in the frequent recurrence of the Arabic *thāl* ث the English *th* in the word *those*, and the Arabic *ṭhāi* ط the English *th* in the word *think*. The scheme of alphabet adopted is the same as that employed for the Brahuiky in the last number.

Gender.

There is no gender in Balochky; for they say,	
Tharā chiai bachhai astain?	Have you a son?
Tharā jinkai chiai astain?	Have you a daughter?
A' mard ākhta.	That man has come.
Ai Barochāul ākhta.	This Baroch woman has come.

Number.

Neither is there any number in the substantives even in those that end in a vowel, which are few in comparison with the whole, for they say, *yak kardyā*, one hilt, *do kardyā*, two hilts.

Case.

Declension of a compound noun.

	Singular.	Plural.
<i>Nom.</i>	Juwiṇ mard	a good man
<i>Gen.</i>	Juwiṇ mardī	of a good man
<i>Dat. & Acc.</i>	Juwiṇ mardārā	to a good man
<i>Abi.</i>	Juwiṇ mardā thai	from a good man

Comparison

is made in the following manner;

Ai sharrind	This is good
Ai gu i sharrind	This is better than that
Ai aj durustāp sharrind	This is better than all

1st Personal Pronoun.

	Singular.		Plural.	
Nom.	Ma	I	mà	we
Gen.	Mi	my	mì	ours
Dat. & Acc.	Manà	me	màrà	us
Abl.	Aj man, iman or manthai	} from me	aj or ach mà, or maràthai	} from us

2nd Personal Pronoun.

	Singular.		Plural.	
Nom.	Thau	thou	shumà	you
Gen.	Thi	thy	shumì	yours
Dat. & Acc.	Tharà	thee	shumàrà	you
Abl.	Aj thau or tharàthai	from thee	aj shumà or shumà thài	from you.

3rd Personal Pronoun.

Remote.

	Singular.		Plural.
Nom.	A'	that	
Gen.	A'hin	of that	The same.
Dat. & Acc.	A'hinyàr	that	
Abl.	A'hinyà thài	from that	

Proximate.

	Singular.		Plural.
Nom.	Ai	this	
Gen.	Aishi	of this	The same.
Dat. & Acc.	Aishiyàr	this	
Abl.	Aishiyà thài	from this	

Reciprocal Pronoun.

	Singular.		Plural.
Nom.	Wath	self	
Gen.	Wathi	of self	The same.
Dat. & Acc.	Wathàrà	to self	
Abl.	Ach wathiy	from self	

Cardinal numbers.

One	yak	Fifteen	phànzdah
Two	do	Sixteen	shànzdah
Three	shai	Seventeen	habdah
Four	chyàr	Eighteen	hasàdah
Five	panoh	Nineteen	nozà
Six	shash	Twenty	gist
Seven	hapt	Thirty	sì
Eight	hasht	Forty	chhill
Nine	nuh	Fifty	panjàh
Ten	dah	Sixty	sì gist
Eleven	yazdah	Seventy	sattar
Twelve	duàzdah	Eighty	chyàr gist
Thirteen	sainzdah	Ninety	navai
Fourteen	chàrdah	Hundred	sakh

Ordinal Numbers.

Walín	first	Sainwín	third
Dopwín	second	Chyàrwín	fourth

Points of the Compass.

Uttar	north	Roshasàn	east
Dakhap	south	Roshaisht	west

Interrogatives.

	<i>Singular.</i>		<i>Plural.</i>
<i>Nom.</i>	Ki	who	
<i>Gen.</i>	Ki	whose	The same.
<i>Dat. & Acc.</i>	Kiyàrà	whom	
<i>Abh.</i>	Aj ki or kiyà thai	from whom	
	Chi,ai	what?	

Verbs.

The verbs will be found dispersed through the early part of the dialogues, or in a future Appendix, as it will require considerable time and labor to collect tenses from men who have never heard of words spoken except in sentences, and who would be confused if asked how to express "thou understandest" in their language. This tense can only be elicited by asking the expression answering to a whole sentence in which that tense is contained, as "thou understandest not what I say"—and as it would be time lost, after having ascertained the verb to reject the rest of the sentence, I have left them to be extracted from the dialogues.

Vocabulary of Nouns.

Naryàn	horse	Shakhal	sugar	Barochàni	a woman
Màthip	mare	Bhyàn	a colt	Ambrà	} companion
Naghàn	bread	Kurti	a gown	Ambal	
Aph	water	Galaim	a carpet	Anishagh	eyebrow
Rosh	day	Khàrd	rug	Làph	belly
Shaf	night	Darmàn	powder	Khond	knee
Laidou	} a camel	Darmàn	wine	Sharosh	elbow
Hushtar		Kàriga	a bullock	Cham	eye
Dàchi	} a female camel	Gokh	a cow	Nasik	near
Phàshin		Raim	grass	Dir	far
Buz	a he-goat	Loghàrà	wife	Khiswà	language
Juwip	a she-goat	Ikhwà	a maid	Safaith	white
Gandang	good	Molid	a slave girl	Siyàn	black
Zà	bad	Pith	father	Sohar	red
Gwàth	abuse	Màth	mother	Zard	yellow
A's	wind	Bachh	son	Khatolà	bedstead
Dàr	fire	Jannik	daughter	Phut	hair
Dard	wood	Gwàr	sister	Ksàn	small
Zaham	pain	Bràth	brother	Dràj	large
Dhàl	sword	Khàrch	knife	Dàl	stout
Thir	shield	Gul	{ an ornament on the shield	Jo dō	thunder
Vhāv	bullet	Asin		Girokh	lightning
Shir	sleep	Pital	iron	Srumbai	hoof
Naiwagh	milk	Post	brass	Maizagh	urine
Moshin	butter	Nukhrà	leather	Riyagh	excrement
Grandim	ghee	Thangon	silver	Washt	molasses
Jav	wheat	Hit	gold	Pat	silk
Phindokhy	barley	Gwand	thin	Kardya	hill
Làghar	beggar	Gudh	short	Zhukht	scabbard
Shuthà	poor	Phàll	cloth	Kupàs	cotton
Akhtà	gone	Bing	turban	Phim	wool
Whàd	come	Bàz	dog	Mid	goat's hair
	salt		much	Zahar	angry

Nàhagh	fish	Khophagh	shoulder	Shànain	} black pepper
Lagh	donkey	Gardan	neck	mirsch	
Daiuv	face	Gosh	ear	Thám	leek
Daf	mouth	Pàhnàd	side	Wasal	onion
Jod	lip	Khash	armpit	Haladra	saffron
Dathàp	tooth	Khunnai	hip	Dhanyá	{ coriander
Zawàn	tongue	Ràn	thigh		
Shalwàr	trousers	Phàd	leg	Sohraimirsch	redpepper
Baroth	mustaches	Piny	calf	Bandikk	thread
Rish	beard	Randh	footstep	Shishin	needle
Phopz	nose	Darashk	tree	Kinch	scissors
Grápuz	nostril	Gaz	tamarisk	Istaragh	razor
Goid	flesh	Khan gaz	the male do.	Chi	article
Pàtā	foot	Màthip gaz	female do.	Photà	cardamum
Nàkhun	nail	Digàr	earth	Lawang	cloves
Murdà nagh	finger	Gap	mud	Wash	sweet
Ràstai	right	Phoph	dust	Hàpwagal	raw
Chappai	left	Nokh	moon	Ask	a deer
Kammai	little	Haur	rain	Mushk	a mouse
Zahar	salt	Nodh	cloud	Chhàth	well
Zaptai	sour	Musht	fist	Chàhàn	{ water-
Sánd	ginger	Chumagh	kiss		
Garam	hot	Anas	tear	Koh	melon
Khargushk	hare	Jàthar	grindstone	Khàn	mountain
Tolagh	jackal	Lagath	kick	Khada	plate
Gurk	wolf	Sinagh	breast	Roth	saucer
Gúrvat	gurnál	Rást	true	Lhiph	entrails
Rich	bear	Drogh	false	Granch	a cloth
Hikh	hog	Guragh	crow	Tubl	knot
Mazàr	tiger	Murg	bird	Gawaish	a dive
Bholà	monkey	Raiz	rope	Hughàn	buffalo
Gwar	nipple	Sing	stone	Gindhàr	male do.
Siriù	waist	Shàphà	horn		naked
Gut	throat	Dumb	tail	Khar	blind
Adth	flour	Littar	shoes	Gungà	deaf
Dàn	grain	Shudh	hunger	Lang	dumb
Hàsh	jaw tooth	Logh	house		lame
Dràzh	long		{ a ring in the	Trizàtk	{ father's sis-
Gwand	broad	Bhúl			
Jahal	deep		nose sep-	Nàpo	{ mother's fa-
Mazai àph	deep water	Nath	tum		
Thir	arrow	Mudh whà-	do. in nostril	Jànwàth	ther
Zaiha	bow-string	da	pearl		son-in-law
Jogh	bow	Náwarash	stew	Màsi	{ mother's sis-
Laihaiph	blanket	Kavév	roast meat		
Phat	wound	Phakkí	roasted	Wàd	sheep-fold
Maish	ewe	Guragh	a crow	Rodh	a calf
Toto	parrot	Puppi	{ father's sis-	Gurand	ram
		trih		Khimjir	partridge
Nàkho	{ father's bro-	Nàkho	{ father's bro-	Dadi	{ father's mo-
		zàkht			
Nakho	{ mother's	Wasi	{ husband's mo-	Thàn	{ stable
		Wàshah			
Bhàn	cow-house		ther-in-law	Amal	{ any intoxi-
			sir		
					cating drug

Vocabulary of Verbs.

Byà	come	Nindbi	sit down	Pat	dig
Gwaók kapi	call	Pádakhdo	stand	Byàr	bring
Bil da,i	let go	War	eat	Birau	go
Giri or dàr	seize	Thingdai	drink	Phàthà bi	stand
Akhietì	asleep	Whàph		Whaphs	recline
Airki	place	shutha	he is asleep	Giri	take
Gir biyà	bring	Gir birúy	take away	Gindh	look
Shir gwash	sing	Jhan	beat	Drush	grind
Phirni	fill	Rumbà gin	run	Phirai	sprinkle
Zindagh	live	Shodh	wash	Kaji	cover
Murtosh }	he's dead	Phivni	pour out	Púr	bury
shutha }		Bosh	unloose	Phash	boil
Grai	weep	Dosh	sew	Sirbi	marry
Chaghal dàì	throw away	Shafshk	sell	Thudo	fear
Khulagh	cough	Zir gir	buy	Nangàra ba	plough
Chishagh	sneeze	Charr	walk about	Phaja byà	examine
Likhwàkh	write	Thàsh	gallop	Kalàthà	assault the
Khand	laugh	Juz	amble	mil	fort
Khar	scratch	Jir gir	lift up	Bhoraith	flee
Malagh	rub	Naiwad	stoop	Dàr	stop
Chaq	mount	Gwànth	fall	Mill	embrace
Irkav	dismount	Chakà }	cover	Laitai	open
Bast	tie	phirni }		Dhak	shut

Vocabulary of Adverbs, Conjunctions, &c. &c.

Maroshi	to-day	Zi	yesterday	Pàngwà	to-morrow
Nazik	near	Dir	far	Aidà	here
Burzà	there	Ni	now	Gudà	after
Darà	out	Yàma	in	Innà nadai,	no
				or nah	
Baigà	in the eve-	Nishty ai	in front	Ai	and
	ning				
Di	also	Demàshta	formerly	Nir mash	midday
A pàhpàdà	on that side	Ai pàhpàdà	on this side	Jhàlà	below
Burzà	above	Navaidà	always	Bukú	where

*Phrases and Dialogues.**Greetings.*

Khush durà jod hir kul hir	Are you well and happy?
Maihar bachha biath chuk	Quite well ! sons and brothers
Chùdari dairo daimà thimidai	Children, house, and all
Hirain sangtà sajohinà shal hir bà	Well ; friends and acquaintance all well

Greeting in Return.

Hir lothi tharà dittho khush bitho	Quite well thank you, I am delighted to see you
Thi halk bukú	Where is your village ?
A istiyà biyà	Come slowly
Airkab biyà	Dismount
Bàzai gwàkh	Is your city far (literally, a long call)
Halka rawàn	Go to the town
Thi nàm chapi	What is your name ?
Thi sardàr kidàm ai	Who is your sirdar
Ikàtar salà chikàtar dān pidà bitha	How much grain has been produced this year?
Walà juwàn athàn	I was well formerly

Walà than juwàn athai
 Walà à juwàn atha
 Nà salim bith
 Mā walà juwàn athón
 Nì hino bitha
 Walà shumà Hydarāwādh athàn
 Walà Pathàn Baloch yār athay

Man Sipāithap
 Thau Sepāithai
 Mārā dafjathosht wārthi
 A noukar ath
 Mā tevgā noukar athón
 Shumā durust noukar athón
 Hame durust noukar athàn
 Thou manī sipāhi bi
 Shumā durust mī noukar biyai
 Ai halkā juwin guthai bigain
 Mī pitha bāryā hamaithā jangai bi
 thaga

Ais bi ghwāra gān
 Khiwara bachha
 Mā shāid biyā
 Hydrabād mā ranvgān bi wakhti
 Thau bukū marawgai
 A bukū maravgai
 Mā durust Hidrawād rarvūn
 Shumā go mā juzzai
 A gulkhantharau
 A gulk thosht
 Drāth kosutha
 Naphthā hakalaksa
 Thau kadhip thari khā
 Mī biāth jangā khushtā
 Sakhai duz ai
 Khalāthā bhorni
 Thī bachhār chikāta sāl bithaga
 Maroshi sakhai haur gwadth
 Mī jarr mithaga
 Ai shiyār samā nnihañ
 Si mirosh pathā siyvkhi

Hamai kbiwā maka aishyār
 jwān na khanath
 Samā khani nawān mānī baidi
 mā digārā
 Jalbānī jangokhi
 Jalbānī phirai mand kiñām ai
 Daryā khānā chikātarai inām
 Mulk inām daihgo digārā

Akhisma
 Maroshi rosh khamin sādthai
 Zi rosh bāza
 Marosha chikātar mahāl wārth
 Marosha makoha mīth bāz pida
 biyagai

Thou wert well before
 He was well before
 He has become unwell
 We were well before
 He has now become a coward
 We were formerly in Hyderabad
 Formerly the Pathans and Balochs
 were friends

I will become a soldier
 Will you become a soldier ?
 I am afraid the dog will bite me
 He will become a servant
 We will all become servants
 Will you all be servants ?
 They will all be servants
 Be my sipāhy
 Be all my sipāhts
 Good cloth is produced in this village
 In my father's time there was a bat-
 tle here

I will visit his sister
 Thou son of a slave
 I shall become a martyr
 I will go to Hyderabad this moment
 Where art thou going ?
 Where is he going ?
 We are all going to Hyderabad
 Will you go with me ?
 He will run away
 He has run away
 He has gone out
 He has fired a musket
 When will you come back ?
 My brother died in battle
 He is a great thief
 He destroys forts
 How old is your son ?
 To-day much rain has fallen
 My clothes have got wet
 He is not conscious
 In three days the boundary will reach
 (literal) us

Don't mention such a thing, he will
 not be pleased with it
 Take care in front the boat will
 strike
 Who are the Jalbani's enemies ?
 Who is the head man of the Jalbanis ?
 What jagire has Daryā khān ?
 The whole of this city and land is in
 fief

Don't delay
 The heat is less to-day, it is cool
 Yesterday there was much
 How many times do you eat a day ?
 How much wool is produced in the
 mountains in a day ?

Matharà inàmàdhyàn thaumanà
 chikktar ghodou diyī majangà
 Mī pàth khisgathà ma kapthawa
 Ai mardog makohà miri aishi yà
 chaitarà pūrdū
 A halk nazikhai
 Maroshi sakhai pandaikthōn ma-
 thaga
 Whāvā kiptha
 Rumbāzīr juz
 Darmān sakhyai tikhig
 Nashā wādhī nī khapthiyain

Ai naryānāi bahā bāz ai
 Mī dast masarrā dāshtish
 Katolā sarrā mī sirāndhī i airkaip

Baloch go zahamā konikthā midī
 Gandim bahā chikktar chotadwā
 rupiyā
 Mānjā chotadwā bāz sir ān ādthi
 Havaidā mardā mith khaptiyain
 Tani bukhtho khapt
 Gudhār walath bukhtho khapt

Pagar ākāt
 Zaham manā maktho burathā
 Ai madi rangā gindh
 A rāh ānjo ain
 Ai mulakā hākamāni sakhai
 zūratā
 Brāthānī midag juwān nin
 Hapwā mardā khiswā āph na dā-
 gha hawā mard baikār ai

A mard gwasto shuthā hawā mar-
 dā kīkār
 Rindhān Chāndyān mouṇ thān sang
 na dāthathā
 Hamai kiṭhā rastar ain
 Hamai kiṭhā chī ain
 Katāi hawē mulkā man ākthā hawai
 mardunā manā phajaha nyādth
 Tufaki thīr mana mānākthā

Mī mard soudāgārā shuthā

Thau manā saṭh rupiyai dai i ma-
 gothau niyān
 Manā sikh makthā phalogā
 Mathi daihār domb bāzān

Mā Balochiyā māniyār chai asha

Wali zāl zindagai dohami khanag
 hukam astai
 Phad chai, nai

If I give you a fief, what force will
 you give me in time of war?
 My foot slipped and I fell
 How can we bury those who die in
 the mountains?
 That village is near
 I have travelled far to-day, I am
 tired
 I feel sleepy
 Make haste and run
 The spirits are very strong
 He is intoxicated with drink and is
 lying down
 Is the price of this horse high?
 My hand is burnt by the fire
 Put the pillow of the bed under my
 head
 The Balochis fight with swords
 How many chotadas of wheat for a
 rupee?
 How many seers in a chotada of flour?
 There is a man's corpse lying here
 The surtout string is loose
 The plaits of the clothes have come
 undone
 The perspiration has come
 I have got a sword-wound
 Look what the man is doing
 That road is difficult
 The oppression of the rulers is great
 in this country
 It is not right for brothers to quarrel
 A man is not worth any thing that
 does not (water his words) keep
 his promise
 The man has started, overtake him
 The Rindhs and Chandyās don't in-
 termarry
 What animal is that?
 What insect is that?
 When I came into this country the
 people did not know me
 I have been wounded by a musket-
 ball
 My husband has gone on a mercan-
 tile trip
 I would not accompany you were you
 to give me a hundred rupees
 I have become home-sick
 Are there many minstrels in your
 country?
 What is "māny" (bread) called in
 Balochky?
 Is it lawful to marry a second wife
 when the first is alive?
 Why not?

Balochāni chitarai guṭhān khanath
Sarā sari guṭh gardanā phashkma
pāṭha shalwār
Ai handa zifāgrā soṇo hinnai

Adai chhe biyā
Thau go washai āph warai ki na-
borgai āph warai
Manya pā rupiyā chikṭār phanji
kaphantha
Maupṭhanā midṭhaga
Nimās māli rawān

Thau waṭhi daihmā āhriyā gindh
Thau chih mandai i
Guṭhā waṭhi jān sarā phirai
A chhai, rā ā sarbarā
Sāhaib baidi ān phalawā maravya

Sāhū zorā mad i khokho dor bi
Havai jwaig mandai ki wah wah
Hawāṅkṭār ki sahaib dā hawāṅkṭ-
tar ma girān
Hamai sandūk girān ai
Girān ai ta zarra thī
Hawēṅkṭār manā gālimiyā
Ai bār sawakk ai
Haṭhig mā tharā dīṭha manā samā
khapht kithau juwaig Baloch, ai
Go ma chathara ma kap
Mī brāṭhā go ma radi kiṭha

Ai mard rav khohā sardār salāmā
ai madārā rāh biṭh

Zi manā whāvā gipthaga maroshi
nah
Hamai digārā draahk zīṭhai ruṭhī
Nī Shāh wāhi mā mokalanuūn
Ma hamai biṭāb durustā laitainē
Gwāṭh bāz māṭhīṭha
Ai halk sunya biṭha
Roah airkaphto navāshān ai
Adṭhā drush nagṭhanā zīṭhai paah di

Miṭha chikṭār zāt biṭha ma khohā
hālā di
Yakai savaiṭh, dohmi sohar, simi
shāṅk, chārmī, savz

Chhid khayā bastaga
Ambalā bastodāṭhagapa zahirāṭhī
khi bandi
Thau phadchai girai i thau ganda-
gai kārai kuṭha tharā kushān
A madā waṭhi butār jatha
Thau haivai tharai Applātūn

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How do the Baloch women dress?
A sari on the head, a phashk on the
neck, and shalwars on the legs
There is no beauty in the women of
this country

Holla! come here
Do you drink water with sugar or
water alone?

How many phanjis are there in one
rupee?

They quarrel among themselves
I will go in the morning—lit. time of
prayers

Look at your face in the glass
What man are you?

Put the clothes on

He is below, he is above

The gentleman's boat is going to the
other shore

Sāhū don't be rough, my ribs ache

Oh, oh, he is such a fine fellow!

I will take as much as the gentleman
will give

The box is heavy

It is heavy, and must have money in it
I don't require so much

This load is light

When I saw you I conjectured that
you were a good Baloch

Don't joke with me

My brother practised deception to-
wards me

If a man were to go into the moun-
tain to visit a chief, would a pas-
sage be granted him

Yesterday I felt sleepy, but not to-
day

Trees grow quickly in this soil

God be with you, you have your leave

I have looked over the whole book

The wind has become strong

This town is desolate

The sun has set, it is dark

Grind some flour and make some
bread quickly

Are there many kinds of wool pro-
duced in the mountains, tell me?

The first kind is white, the 2nd is
red, the 3rd is black, and the fourth
green

Who has tied those cories (shells) on?

My lover has tied them on in fond-
ness, who else would do so?

Why are you weeping, you have done
something wrong, I will beat you

That man committed suicide

Are you a kind of Plato?

Ai thî go ma goza na dî
 Zi thau manà kisso gwashthaga
 tharà hawàn kisso gir aip
 Hawai mung Kithàn boli akha nag
 aip
 Khu/hà zàth hawai Kisawa
 Gàda bitha
 Aph garam bitha ni garathagi
 Mard giraigh jwàn nai zal giraigh
 kàr aip
 Zurthàn jwin avo anth
 Balochàn hidthi hidthi doshan

Panjhi ai hawai Khunar bàz anth

Raiz maludaga
 Balochàn àph taragh samà nai
 Balochàn ma wathî mulakà mahi ua
 waragh
 Maroshi mà tamàshai ditha Kacho
 aip gandagai gojd hudssinà wad-
 tha daryà bharra mudtho khap-
 thaga

1st.

Kidd Gabol Gàdhi Pàchàlo

Talbur Baiwàkai mari
 Durust ghulàm i chàkari
 Bânadi bashkà thaga

Dath nazurth Hadhaiyà

Nothà ki guzith savzainà
 Bikaizaryàn bàzainà
 Chammà ni sari gwàzainà
 Man phathau tàrsar
 Baid cham chiragh pàraiwar

Syamà chotho drashkabar

Kison chhobitha
 Drashka I'sni àkàtaga chhar ànà
 Mulko Kichahàn golànd

Bari dithai mablwànà
 Chuchù zindagai baidànà
 Askko wari 1 manà
 Baria jawàv tharainthà
 Isai dandamànai nisht
 Rab Kuristhàn ditha
 Drashk shair digarà rusta
 Gafshai bangwai sarzurthà
 Nair moshai baraihur bithà
 Drashk dabaighà lâl bitha

Don't be so arrogant
 Do you remember the story you told
 me yesterday?
 What birds are those making that
 noise?
 God knows such a thing
 A boil has appeared
 The water is warm and effervesces
 It is not proper for a man to weep, it
 is the practice of a woman
 Juwari is very good roasted
 The Baloch women do fine needle
 work
 How many "ber" berries for a pan-
 jhi (pais)?
 The rope is shaking
 The Balochis don't know how to swim
 The Balochis don't eat fish in their
 own country
 I saw a sight to day, three Kachos
 lying dead on the river bank who
 had eaten rotten flesh.

Lays in Balochky

Translation.

Kidds, Gabols, Gàdhais, Pàchàlos Tàt-
 pòors
 and lawless maris
 all were slaves of Chàkar, (Rindh),
 And he gave them with (his sister,)
 Bânadi
 as a dowry to Hadheyo, (Rindh his
 son-in-law) who refused to take
 them.

2nd.

Ye clouds that make green,
 don't rain too much;
 or mine eyes won't close all night;
 I am thine oh crowned head;
 the eye light and preserver of the
 world,
 with snake locks like a branching
 tree.

The story of the tree is this:
 I'sà came as he was travelling
 in the quarters of the surrounding
 country.

He saw Bari in the desert—
 tell how do live without grain,
 whence do you eat truly?

Bari answered him:
 I'sà sat there for a moment;
 He saw the power of God.
 A tree grew out of the ground:
 At morning prayers it grew up;
 At midday berries grew on it;
 In the afternoon they became red
 ripe.

Drashk barkuno dubittā
Juwān ai mardamaiv hadābittā
Chhoka gonawāyān bittā
Hhā chhotwā hamchobā

Barkat Ah juwān marda
Singo koh āphittā
Railai sahir darbaishā

Divānbyārī Kalamowā

Yād kanā pīr nou bahārā

Hardamai malak sachārā
Shāha mardān kiddagārā
Panchtan pāk chār yārā

Pākhar sher potra wārā
Bai Masūd Rostamārā
Saringī dāwā gzarārā
Jumlaī shair potrawārā
Sā Bahrām nar mazārā
Kāj nishā ba karārā
Ghodai vai sudta Masārā
Kadū gulāthai swārā
Sinjku thant tāi bishārā
Rahzani nām thewārā
Rantā Kachi digārā
Ruthai baggai bai shumārā

Adithā shaharān ba karārā
Bārkhutha thir dārā

Gul Mammad Brāhui sugwārā
Akāt sathī gwar Masārā
Di manai bagg katārā

Gwasht daraihaq dāwaidārā
Phok di sārī jamārā
Gōsh Gul Mammad paitawārā

Chandyān honi bishārā
Bhorai towārtha Masārā
Gwasht Gul Mammadā sachārī
Gaahda Bahrām Masārī
Hinbarā baggai Guzārī
Haisarai burr Masārī
Jath baggadā salāmā
Dāha gāthā shair kasārā

Dairvi khān navāvā
Mānawa palk gāndiyā
Tabāl waj shātāiyā
Mir chadāthā wathariyā
Gothuman brātāriyā
Zor Sultān Arafīyā

4 H 2

On one branch two were produced
fit for men of rank to eat.
As it happened to him,
by my head and locks may it be so
with me.

Ah, you are a hero,
in rocks you get water :
The wanderings of the Darvish are
these.

Gentles my story is finished.

3rd.

Let me call to mind the Pir of the
new spring
always the true master
the king of men; the producer
Ye five pure-hearted and ye four
friends,

Be behind the lion's son
Be both ye Marids and Rostamids
Ye Saringis takers of revenge
Be all behind the lion's son
The noble Bahrām the male lion
In his kingdom sitting at ease
The Muzāris mounted their mares
Kadū with a few horsemen
They all saddled their mares
His fame for theft was great
He went to the Kachi country
And brought away the camels with-
out number

And came harmless to his city
They divided lots by arrows and
straws

The noble Gul Mammad Brāhui
Came with many to the Muzārā
Saying give me back my strings of
camels

Daraihan the revenger said
I will not give them while I live
In your ears I tell you Gul Mammad
plainly

Many enemies many
We Muzāris have bound and ate
Gul Mammad the true said
Bahram Muzārī shall hear
I will either take camels in return
Or the Muzāris shall have my head
By the Jāths he sent a challenge
Who petitioned to the assembled
lions

The Khāns and Navavs of cities
Quickly in a moment of an hour
The drums beat joyfully
The Mir mounts himself
With all his brothers
By the power of Sultan Arefga

Bagg nilā gonbatāiyā

Darshanai shīr pharagānai
Masarā bat hamalāni
Sa ha vai Mir mansawānai
Baath hatyār kimatānai
Zin git shihanāni
Nāzaha bor nārahanai
Sanj thāsa dorawani
Bithai nāl gwāṅk ukahānai

Wanjān dil pijāni
Ziu git pāhalwāni
Laikhai si gis Masārai
Zudtwai tājai tāra
Mir Masaraiba subkāra

Jathro kau ra diwārā

Adt gondātā mazārā
Nashk bishair potrawān
Bijalo khān wādhwāni
Shair shihl bahāzurāni
Hājiyān sūn sathāni
Mohāri bitā suriyāni
Jang mashkul durghyāni
Jiwan bor dādhwāni
Kādhū wadā nai badānai
Zaham al mas tai durāni
Bingwā gwasht zawāni
Ghodo paishimidānai
Gon sāfar khān Jabāni

Hākim kinn daihāni
Sangti Shair potrawāni
Sujalū Path Maghai
Gonath zahma himati
Chāndyā Gubzār Rāzi
Zaham wakti li khubāzi
Si gist jang i Mazāri
Do sath Brahui Jamālī
Wātti zahma bawālī
Trada naptā bukkālāri
Dhal dashta bāt jādi

Hashda Pandrāni
Mir Brāhui ulkukāni
Nam nazānā gapāni

Gadtai shair i turānā
Hakul hā gāndayānā
Nam Durhyānā ḡirānā
Ishty nashkai majhyānai

Bith samho gothumānā
Math bithgo Fauj liyā
Drokuṭhā taighā thiyā

I will not give the camels to mine
enemies

Start ye citizens and villagers
In front with Hamal
That great man Mir and hero
Bind on your valuable swords
Take hold of your saddle bows
The bays dance and neigh
Saddles, stirrups and worked stirrups
The noise of the shoes of the feet
was great

Our lord with a glad heart
On the saddle of his mare
Sixty Mazaris were counted
They pushed their mares to speed
The Mir is in front, victory will be
theirs

At the stream of the Jathro moun-
tain

The Muzaris arrive
The fame of the lion's son is great
Go on ye great Khans
Braver than lions
Haji the pilot of a hundred
Get in front thou hero
Fight Mashkul thou supremely brave
Jiwan on his fine mare
Kādū hammer of thy enemies
Thou sword of the fierce durānis
Bingwa uttered this speech
I will take my mare before all
In company was Jaffer Khān Jal-
bāni

Governor of the Kinn district
Were with the lion's son
Sujalo and Path Maghai
Were in company brave swordsmen
Gulzar and Razi Chāndyās
The players at the battle of swords
The Muzaris force was sixty
Two hundred Brahuīs and Jamālīs
They turned and fled from the swords
The guns and swords were used
On the faces and jaws of those with
shields

Eighteen Pandrānis
The Mir of the Brahui country
His name is unknown that it could
be mentioned

Those of the lion's locks return
He came calling aloud
He takes the name of Darjān
He quitted this world and kept his
vow

They advanced all together
He had closed with Fauj liyā
His sword was false for it broke

Lutbi yaikghadiya
 Hajsiyan dawa giriya
 Go midoka bashkaliya
 Husain Khan mardi rallya
 Jang mango bith sardar
 Suraiha Gul shair Dildar
 Jan Mahammad Jiwan Khana
 Gul Makh Tajú Jamali
 Aj phakta gwank siyali
 Daimai khandati jamali
 Kushta Gul Mammad Gist chara
 Da fatteha kidd gara
 Mishkada sari jamara
 Diwan byari kalamova

They were killed in an hour
 Haji entered into a dispute
 And quarrelled with Bashkaliya
 Husain Khan was among men
 In the battle were these sardars
 The brave Gul shair Dildar
 Jan Mammad Jewan Khan
 Gul Makh and Tajú Jamali
 Called them retreating enemies
 Hereafter the Jamalis will laugh
 Gul Mammad and 24 were killed
 God gave the victory
 He became musk in the world
 Gentles my lay is finished

A Balochky Love Song.

Sehwan yadkanā Sehwanā

Bashk lāl manā imānā
 Kāhni kahev murgāni
 Hāl māhram dostāni
 Gaishtar birsari hothāni

Lodi zaiharān āktā
 Dast dast, nishāni ādthā

Monj darin dil bothakhtā

Kādzi barāigain singārthā
 Paishi mullawāo bāngā
 Phulai sarmahārāi shipthā
 Yakpati shalānā kāpyun
 Ganja bailo nūrwahā

Jathānai binindai jāhain
 Kulāp gorginā gāth
 Dost amsaro phalchhāt
 Jaidi amsaro lhiwi

Shaht mardamai pāpudsai
 Rindhi baidagai sagbandān
 Kul bānzarā laitainā
 Bhoupri wāzgir lālinyā
 Shi māhi zaihr thālāmbi
 Rūsi bahmani balāthā

Barkat Aly juwān marda
 Railai zāharai darbaisha
 Diwan biyāri kalamowā

Rindhāi kachāri ai kuthā
 Gwasht mirāip chākārā
 Dūshī girokthān chumbarā

Kasa gwāhi na dāth
 Gālā murid daiwāngai

4th.

In the morning Sehwan comes before
 me

Endue me O Lāl with truth
 She's a pigeon a peahen in walk
 The state of my love is a secret
 That very modest and beautiful
 creature

The minstrel has come with his lyre
 And brought a token on his hand
 from my love

My heart that was dry as wood be-
 came glad

My bay mare was got ready
 Before the evening call to prayers
 I put ornaments on the head stall
 Without halting at speed I will come
 To the flourishing Beilo on the Nūr-
 wahā

Where my Jathani is residing
 The huts of reeds are crowded
 My love is fairest of all
 Among her companions and play-
 mates the fairest

I sent a man secretly
 My Rindh dress arranged
 I opened the curtain of the house
 As the tree smells the flower
 The pain of six months is removed
 May you be pleased with no one but
 me

Aly is a great hero
 Such are the wanderings of the bard
 Gentles my lay is finished

5th.

The Rinds were all assembled
 Mir Chākār spoke
 "To night how many times has it
 lightened"

No one had witnessed it
 The fascinated Murid spoke

Agai jan mard Koshinabai

Rāstai nishānā rās dyān
Duahi girokthān sibarā
Dā dubarā shāmāl kuthā
Gāl Amīrai chākārā
Bhālō Mubārak pusagā
Hikhai i zith rawān
Dir banai mulkai kawān
Gālī murīd daiwāngai
O Sharra bāwā manī
Sharrai na dithai dost manī
Kitai sarra barai kula
Macharragān gārkuṭhān
Man dān kurān dānwathā
Man nailagati yāniyān
Lohār pa bāsa phadān
Gudakhān gwāth dhawān

Pachomanai daiwānaga
Phamā byārai thāwadān
Mullā bāzai khāga dān
Mālamai haufainai
Mullā Mūnshi ai nabān
Mak nimāsa na padān
Dast bastago sirai bukhtaga
Gud Amīr mojjā

Kaulai trāshān chothwā
Mirai salāthān irkanā
Jān kadā kokh gadhān
Phadkālāw pahālyā
Dast khāmā pa I'āiyā
Pillāph Mirā Chākārā
Borā ila bastga
Kul dhwā ā haizagā
Mākh malang wagadhā
Tahki o ra hijjā rawān
Hijjā dara zarāt khānā
Hānī markhānai murīd
Ma kūtwayiā thakathā
Mast murīd cho laidhawā
Chhakai janai hānalā
Narmagā do rakhānai
Hānai khwānka phaphadā
Chākār Amīdī bāgdā
Log athī ā āakhawā
Barā thiyā duz barā
Diwan biyāri kalamowā

"Formerly lover and mistress were
not killed

Mark well and consider it as true
To night it has lightened thrice
No twice it has become light"

Mir Chakar spoke

"Very well Mubarak's son
At this instant begone
Remain in the far Ban country"
The fascinated Murid spoke

"Oh my own father

Tis well you did not see my mistress
With bare head in the wide desert
I will wander and make my grave
With only a Qurān with me
Don't put manacles on me
At work is the cruel ironsmith
With the breeze of the south in his
bellows

They are for me who am mad

Bring for me a potion

The Mullā may give me many charms

He doesn't know my disease

I am not a Mullā or Mūnshi

I will not repeat prayers

I will now stoop my back is broken

And to be struck with the Amīr's
shoes

I vow to cut off my locks"

The Mir took off his weapons

Took off his starched clothes

Left his carpet with Alīyā

His bow with I'ā

"Mir Chakar may take all

My mare her picket pegs and ropes

She will stand starving at her stall

I will go begging with beggars

I will certainly go on the pilgrimage
And offer at the door of the temple"

Hānī and the noble Murīd

Were shut up in a room

Murīd like a wild camel

Bites Hānī's cheek

And her soft lips

Hānī is called from behind

From Mir Chākār's house

May his house take fire

And his mare be stolen away

Gentles my lay is finished

✓ III.—*Native account of washing for gold in Assam.* By **MONERRAM, Revenue Sheristadar, Bur Bunderes.**

[Communicated by Capt. F. JENKINS to the Coal and Mineral Committee.]

There are no old papers of the *Assam* time relative to the above subject, but the following is compiled from the hearing of respectable people and shews the present state of gold washing on this country.

Before the British took possession of this country, the *Assam* rājās used to take from the sonwal's of *Upper Assam* a yearly tribute of 4000 tolahs of gold, and in the time of the Boora Gohynes 2000 tolahs used to be taken: when the Government had possession of *Upper Assam*, a tax was levied on the north bank of the river from 400 sonwal pykes, and at present there are about 150 or 160 gotes of pykes in all *Upper Assam*, from whom the rāja collects a tax. Besides these there are about 250 or 300 of these pykes (old and new) in the *Bur Senaputtee's* country. There are also about 10 or 15 gotes* of these sonwals in *Bishnath*, and *Sanaree Chopree*; and some in *Lithure*, *Gorokhia*, *Kalonescholee*, and *Morung*, and there are 50 or 60 houses of them in *Sadiya* and *Sookhown*. In the rāja's country the greatest number of his sonwal pykea reside on the north bank of the *Bur-rumpootur*: there are only about 26 houses of them on the south bank.

Assamese sonwal pykes during the time of Government.	During the present rāja's time.	Living now and on which bank of river.	Manuany sonwal pykes where living.
Gotes.			
Bur Buroosh's Bhag,..... 1	"	"	Muttuck
Seering Phookun's Bhag, .. 29	16½	South bank	"
Tapomeea Phokuns Bhag, .. 6½	"	"	Muttuck
In Seesee Tangonee,..... 26	"	"	Ditto
In Lokimpoor, Soolpanee, Nomel and Charengesá Burooah's Bhag, 69	44	North bank	"
In Bunscootta, 12½	7	Ditto	"
In Narsainpoor, 8	3	Ditto	"
Cackaree sonwals, in Seesee, Lokimpoor and Majalee,..... 250	90	Ditto	"
Cackaree sonwals on the south bank, 11	4	South bank	Muttuck, &c.
Near the Dehing river, "	15	Ditto	"
Behesa sonwals, 44	5	North bank	Muttuck
457½	184½		

The kheldars object to the 184½ gotes of pykes at present put down by the rāja, but admitting all their objections, there are not less than 150 gotes of these sonwal pykes in the rāja's country.

* A gota of sonwals consists of four pykes or individuals.

Gold washing is the occupation of the sonwal pykes, but other pykes sometimes join with them and receive their share. The tax is levied on the sonwals only at the following rates. At the time of the washing, the Burahs, and Sykeas with their sonwal pykes go in a body to the place selected by them, and at the close of the year each pyke gives $\frac{1}{2}$ a tolah of gold for his share of tax; but there is an extra cess levied for melting, &c. according to the quality of the gold; for the best kind (or votom) they give 3 rattees more than the $\frac{1}{2}$ tolah, for second best (or modom) 4 rattees, for third sort (or norrom) 6 rattees or 1 anna; besides this there is a commission of one rupee's weight in every 20 taken by the Phookuns and Burroahs, half tolah in 20 by the Teklahs and Burrahs, $\frac{1}{4}$ tolah by the Bhundar Kagotee, and when the tax in gold is presented to the rāja, the Chung Kagotee, the Bhundaree Leekeerah, the Pachonee, and the Kookoorah chowah Burrah, take altogether $1\frac{1}{4}$ tolahs of silver for each tolah of gold.

In the time of rāja RAJESWUR SING, the sonwals of *Upper Assam* alone used to give 6 or 7000 tolahs of gold in addition to the mohees or tax that was levied on them, and in rāja GOUREENATH SING's time the sonwals of *Upper Assam* used to give 4000 tolahs of gold every year; besides this there was gold received from the following places of *Lower Assam*, *Chingah*, *Sondhonnee*, *Chootsea*, and *Chatgarree*, and it was also brought from the Bhooteahs by a sunzattee sent by the rāja. The best kind of gold is that found by the jongol sonwals, and the Kacharee sonwal's gold is the worst.

The hill streams produce the best gold, and the stronger the current of the stream the better the gold; very slow running streams do not produce good gold. The gold found in the *Burrumpootur* is not good, it is washed by the Kacharee sonwals, and this is the reason why the Kacharee sonwals have no good gold.

List of rivers in Assam which produce gold.

1 Lohit	*1 Kakoe	1 Sonsiri	1 <i>Doka Jooree</i>
1 Dihing	*1 Kuddum	*1 Jongloong	In the east 2 Jooree, if
1 Tengapanee	*1 Somdiri	*1 Jajee	the gold is washed with the
1 Paroorah	*1 Doosra Deejo	*1 <i>Desoe</i>	consent of the Duffa,
1 Dehong and	1 Dikrung	Under the Duffa	each party can collect $\frac{1}{2}$ of
Dibong		hills in Chardoar	a tolah daily.
1 Deegaree	1 Kharace		
1 Dhol	1 Booroee	1 Doobee	1 Pomahs
*1 Seedang	1 Bor Gang	1 Pormae	1 Garroah
1 Dibooroo	1 Bor Deckoree	1 Roydeng	Besides the above there
1 Soobun siri	*1 Bhoirobbee	1 Bechumae	are several other small
1 Deejo	1 Mansiri	1 Kallee Jooree	streams.

The names of rivers marked thus * produce the best gold.

There are other rivers falling into these which produce gold, but the best gold is found in the most winding streams with the strongest currents.

Not having any old papers on this subject there may be some trifling errors in the above estimates, but it is a positive fact that 4000 tolahs of gold at the very least were received annually by the *Assam rāja*.

There are four methods of collecting gold as follows :—

1. The *Kacharees* wait until the river rises and when it falls again suddenly they scrape up the sand and wash for gold.

2. All other *sonwals* collect and wash for gold during the dry season.

3. The *sonwal* of the *Rydegeea Phookun's Bhag* go up into the hills and collect the *copat*, which they burn to produce gold.

4. The gold-washers in the *Seedang* river get the gold by washing the moss and slime which they scrape off the *rocks* in the bed of the river.

These are the four methods by which gold is collected, but the gold-washers generally collect the gold during the dry season.

Method of washing and collecting gold from sand.

Wherever the current is strong with a falling bank above it ending in a sharp turn of the river, the *sonwals* examine the opposite shore where the sand from the falling bank is thrown, and if this should contain gravel mixed with the sand it is accounted a good place to find gold in.

Each party consists of a *patoee* and 4 *pallees*, who wash in one trough (or *derongee* No. 5); when they find a proper place to commence operations they begin by working about in the sand with a sharp pointed bamboo (No. 1, or *sokalee*) to find the depth at which the gravelly sand is, they then take it up in a piece of split bamboo, (No. 2, *bans chola*) and examine whether there is any gold dust in it; if they see 12 or 14 bits they immediately build their houses and commence operations. They first bund up the deep part of the stream, if it be a small one with sand, and if large with stakes and grass: the stream then takes a different direction over the sand; they allow it to wash away the upper surface of sand so as to expose the gold sand, when the bund is re-opened and the stream returns to its original bed. The upper sand is then scraped off and the good sand collected with a kind of wooden spade (No. 3, *kater dohtal*); this shovel is $1\frac{1}{2}$ cubits long by 1 cubit in breadth, with a handle 4 cubits long; the blade is of the form of a crescent with holes at each corner through which a string is passed and two men lay hold of and pull this string, while a third person keeps pressing the spade

down in a perpendicular position; the sand is then taken up in small baskets with handles (No. 4 called cookees) and thrown on a bamboo lattice work or strainer (No. 6 ban) which is laid over the trough by a (dorongee No. 5.) This trough is made of wood and 3 cubits long, 1 cubit broad and 1 span high all round, with a slit 3 fingers wide at one end. Water is now thrown over the sand with a calabash having a large piece scooped out at the bottom, beside a very small hole on one side (No. 7, lao); the water is thrown on with one hand while the other hand is employed in moving the sand about and sweeping off the larger particles of gravel from the surface of the strainer; in this way the sand is spread on and water poured over it; and as the trough fills the water and dirty sand run off through the slit in it, while the clean sand and gold remain at the bottom of the trough. I forgot to say that the trough is placed at a small angle to assist the water and dirt to run off quickly. When 40 or 50 baskets of sand have been thus washed into the trough the sonwals call it a sheea, and if a ruttee of gold is produced from one sheea they think themselves very fortunate indeed, for during the long days they get about 30 sheeas or washings producing one ruttee each, and during the short days about 25 sheeas, each party thus making on an average about $\frac{1}{4}$ of a tolah of gold daily. When they happen to fall on a good old stream that has not been disturbed for 5 or 6 years they get 2 ruttees of gold from every sheea or washing, and then each party makes about $\frac{1}{2}$ a tolah daily.

The gold and sand of the last washing is collected into pottles (or chongas) by spreading a leaf of copat or some other plant at the end of the trough, and dropping water very gently on the sand through the small hole in the calabash, which causes a parting of sands and gold to be thrown on the leaf; when the whole is collected in this way it is put into the pottle and tied up and the next washing is commenced on. As soon as they have collected enough in the pottles they give up washing the common sand, but pour out the gold and sand from pottles into the trough again, and putting in about an anna's weight of quicksilver for each tolah of gold dust, they pour water over the sand to keep it in motion while the quicksilver remains below with the gold dust and forms it into a lump; this lump is then put into a shell and on a fire of nahar wood charcoal; when the quicksilver evaporates and the shell becomes lime; it is then carefully taken up in a spoon and thrown into water when the gold falls to the bottom; if it be of a brass color it is wrapped in a paste made of clay from the cooking choolas mixed with a little salt and burnt in a fire, which gives it a proper color*.

* This process causes an absolute refinement of the surface of the gold:—it is the same used in gold refining by the natives, but in the latter case the

The gold is washed for in all streams during the months of Maug, Falgoun, and Choit, and also in a few streams in the month of Assin and Cartick, but during 4 days in each the sonwals do no work, viz. at the new and full of the moon, on the first of the month and on a general holiday all natives have *once* a month called ekadossee, (the 11th.)

The Kacharee sonwals use the same instruments as above.

The Rydengeea Phookun's sonwals burn the copat leaf and thus produce gold from the ashes as written above.

The gold-washers in the *Seedang* dry the moss and slime and then wash it in the usual manner.

This is the way in which gold is washed, which is so uncertain that an unfortunate set of men sometimes get only about a tolah after a whole months labor.

IV.—*Further information on the gold washings of Assam, extracted from Capt. HANNAY's communications to Capt. JENKINS, Agent to the Governor General in Assam.*

It is the general belief of the inhabitants of the surrounding countries, that the rivers of the valley of *Assam* abound in gold, and this is in a manner corroborated by the numbers of the inhabitants of *Assam*, who are gold-washers by profession; and judging from this fact, and the compacts which existed between the gold-washers, and the state in regard to revenue payments, the quantity of gold received into the public treasury must have been considerable.

The gold-washers of *Assam* are designated sonewahls, but as they were distributed in different parts of the country and placed under the authority of Phokans, Boorooahs, and other chiefs, they were generally known only by the names of the "Khel" or tribe of chief, under whom they resided. They were of all the classes and castes found in *Assam*, the Beheeahs (a tribe of Ahoms), and the Cassarees, being however the most numerous. The sonewahl Cassarees, who formerly occupied *Sydiah* and its vicinity, were a distinct class from those residing, as before mentioned, under the orders and authority of different chiefs; they were entirely under the orders of the rajá himself, and they supplied him with gold when called upon to do so.

The whole of the rivers* in *Assam* contain (as formerly noticed) metal has to be reduced in the first instance to very thin leaves to allow the muriatic acid fumes to penetrate and unite with the alloy.—Ed.

* A list has been given in the foregoing paper; but many names differ: Capt. H. states that in fact it comprehends all the rivers and torrent streams in *Assam*.—Ed.

more or less gold in their sands, and the soil of which their banks are composed; the most noted however are the *Bor-oh*, *Subon-shiri*, *Desue*, and *Joglo*, the two latter containing the purest and best gold, and in the *Joglo* it is said that this precious metal is found in large grains, about the size of a grain of rice. The color of the gold also in both the last named rivers is of a deep yellow, and it was so much prized, that the jewels of the rāja's family of *Assam* were invariably made up from what was collected in them.

The gold of the *Buramputer* is considered the worst, and it seems to be a general opinion, that the gold is best, and in greatest quantities, when the bed of the rivers is composed of a mixture of sand and small pebbles. I cannot however speak with confidence on this point, further than to observe, that the whole of the rivers I have enumerated have their sources in the mountains, and they have naturally for a considerable portion of their course a pebbly and stony bed.

The *Desue* is a small river, and has sometimes little or no water in it; it has a short course from the mountains south of *Jorchaat* (where it rises) to the *Buramputer*, and a heavy shower of rain near its source causes it to rise suddenly. The gold-washers carry on their operation one and a half days' journey above *Jorchaat*, where the bed is stony.

The *Joglo* rises in a range of small hills, which stretch across from *Jaipore* towards *Sudiya*, and after a very short course of a few miles falls into the *Booree Dihing*; it has throughout a pebbly bed, and towards its mouth the banks are high, and composed of yellow-colored clay, similar to the soil of the hills and the tract of country through which the *Joglo* passes. At the mouth of the last named river the bed of the *Dihing* is conglomerate rock, rich in iron, and the hills in which the *Joglo* has its rise, abound in iron and coal.

The sonewahls endeavour to keep their art as secret as possible, and wish to make people believe that they have particular methods of washing for gold, and that they alone know the most favorable spots for carrying on their operations. A few of these peculiarities however have been pointed out to me.

The best time to wash for gold is after a rise of the waters in the rivers, and the most favorable spots are where beds of the rivers are composed of small rounded pebbles of quartz and sandstone, with a mixture of sand, and also in spots, where from natural causes, there is an extensive deposit of this. In the *Joglo* however the soil is scraped from the banks, and washed, and I am told that the soil and sand which has collected about the roots of trees on the banks, is considered rich

in gold, but particularly when it has collected in considerable quantities round the fibrous roots of the gigantic fern.

Hollows and cavities in the loose ferruginous sandstone (which abounds in many of the rivers) are likewise cleared of all sand and gravel, the outer coating of the sandstone scraped off, and all is carefully washed. This last is said to be sometimes a prolific source of the precious metal.

I have only twice witnessed the process of gold washing, once in the *Erawaddie*, and once in the *Booree Dihing*, and although the method by the gold-washers differed, the soil washed was the same. The residue left, after the sand was washed out, was in both cases, a black metallic looking sand, which contained the gold, and this blackish sand is invariably met with, excepting in washing the outer coating of the ferruginous sandstone above mentioned*.

3rd April, 1838. Experiments.—In the *Buramputer* or *Lohit* which it is called above *Debong Moukh*, and in the vicinity of *Tengapannee Moukh* a party of Cassarees 60 in number, washed for five days, and realized 25 rupees weight of gold. Also twenty men for one month who collected half a tola, or eight rupees worth of gold each. And fifteen men for one month, collected each eight rupees worth of gold. The above operations have been performed within the last few years.

In the *Noa Dihing* both above and below the present village of *Bessa*, a party of twenty Cassarees, washed during three months in the latter end of 1837, for gold, and realized eight annas weight each, in all ten tolas, which was sold at *Sydiah*, for twelve rupees per tola of gold dust.

In the *Booree Dihing* a party of Cassaree traders in salt, 24 in number, washed for gold during their stay at *Jaipore* for one month, and realized in all twelve annas weight of gold.

In the cases above mentioned there is a considerable difference in the quantities of gold collected. The last named however, being realized when the party were on a trading visit to *Jaipore* for salt, can hardly be considered as a fair specimen, as the washing for gold was looked upon more as a pastime and the labour by no means constant. But the first mentioned instance may be taken as a very fair specimen of what can be earned by gold washing in the *Lohit*, when the numbers of the gold-washers are considerable, and when the object is to procure as

* Capt. H.'s account of the process and implements is omitted, as a tolerable description has already been given in the preceding paper. Might not the galvanic magnet be advantageously employed in freeing the washed sand of its ferruginous particles? We have frequently employed the common magnet in the examination of small specimens of these sands with advantage. The use of mercury might thus be avoided.—Ed.

much gold as they possibly can within a short period, which was the case in the instance above alluded to.

The only peculiarity I can find worthy of notice, in regard to the foregoing information is, that in washing the sands of the *Nos Dihing*, a quantity of beautiful and minute crystals of quartz are left after the dirty portion and larger pieces of gravel have been thrown aside, and this description of residue is not observed in any other rivers of the upper portion of *Assam*.

I have also to remark that it is the custom with the sonewahl Cassarees of *Sudiya* to reckon four men to a gote, their method of washing for gold requiring for each durrune, or trough, four men to keep the operation constantly going on, the distribution of them, being, one man to wash, two to bring the soil, and the fourth to dig—and all relieving each other at intervals.

5th May.—The information which is herein given may be depended upon as correct; it was taken from the head of a party of sonewahl Cassarees now residing at *Burgohain Pokni*, on the south bank of the *Booree Dihing* who make a yearly visit to the known sources of the precious metal. The dates are not specified, but the washing for gold took place at different periods.

1. In the *Lohit* or *Burampooter* above *Sudiya*, a party of gold-washers consisting of 12 men washed for 20 days, and realized 7 tolas of gold.

2. In the *Dholjan* or A. B. *Burampooter*, a party of 20 men washed for 16 days and realized 1 tola.

3. In the *Jungi*, 15 men washed for 20 days and realized $7\frac{1}{2}$ tolas.

4. In the *Desus* or *Jorehaut* river, 15 men washed for 12 days and realized $7\frac{1}{2}$ tolas.

5. In the *Dhunserees* river, 15 men washed for 12 or 15 days and realized $7\frac{1}{2}$ tolas.

With reference to the above I have been told that the quantity of gold obtained in the three last mentioned rivers or rather hill streams, may be taken as a good average of what can be procured from them; they are considered rich with reference to other streams in this province which are washed for gold, and the quantity which could be obtained must depend upon the number of people employed. In my inquiries regarding particular localities, soil, &c. washed, I can obtain nothing additional to what I have already laid before you, a sudden turn in the river where there is a deposit of loam sand and small round stones or pebbles, and a situation where the level of the country commences to ascend towards the hills, seem to be considered the most favorable localities with reference to the small streams which I have noticed here.

V.—*Lithographs and translations of Inscriptions taken in ectype by Captain T. S. BURT, Engineers: and of one, from Ghost taken by Captain A. CUNNINGHAM, of the same corps.*

Delhi Iron pillar.

In last month's Journal I commenced the agreeable task of laying before my readers that portion of Captain BURT's budget of inscriptions (gleaned in the short interval since his return to India), which was couched in the old *Pāli* character. I now take up the second division, containing those in what has been designated by himself the 'No. 2 character of the *Allahabad* pillar:' to which series belongs three very interesting inscriptions, two entirely new from central India; and one, known far and wide certainly, as far as its existence and its supposed illegibility are concerned, but hitherto never placed before the learned in its true condition, so as to allow a fair trial at its decipherment. I allude to the short inscription on the celebrated iron pillar at *Delhi*, of which I published in 1834, an attempted copy taken by the late Lieut. WM. ELLIOT at the express request of the Rev. Dr. MILL; but it was so ingeniously mismanaged, that not a single word could be made out! and there can be no wonder at this, if the reader will take the trouble to compare Lieut. ELLIOT's plate (Pl. XXX. Vol. IV.) with the accompanying reduced lithograph of Capt. BURT's facsimile! I should perhaps remark that I lithographed the present plate *before* transcribing it for the pandit, so that there could be no partial bias towards a desired construction of any doubtful letter. Nothing of the kind however was necessary: the letters are well formed and well preserved notwithstanding the hard knocks which the iron shaft has encountered from the ruthless invaders of successive centuries. I have been promised by Capt. BURT an account of this and the other monumental remains visited in his journey across India; I need not therefore enter upon the history of the *Delhi* iron pillar, but shall confine myself to the restoration and explanation of the record it contains.

The language is Sanskrit; the character is of that form of *Nāgari* which I have assigned to the third or fourth century after Christ, the curves of the letters being merely squared off: perhaps on account of their having been punched upon the surface of the iron shaft with a short *cheni* of steel, and a hammer, as the absolute engraving of them would have been a work of considerable labour; but this point I have not the means of determining.

The composition is poetical, consisting of six lines, or three *slokas*, in the *sardula vikṛita* measure:—it is observable that the first line is written in a much smaller hand than the remainder.

The purport of the record is just what we might have calculated to

find, but by no means what was fondly anticipated, or what will satisfy the curiosity so long directed to this unusual and curious remnant of antiquity. It merely tells us that a prince, whom nobody ever heard of before, of the name of DHAVA, erected it in commemoration of his victorious prowess. He was of the Vaishnavi faith, and he occupied the throne he had acquired (at *Hastinapura* ?) for many years ; but he seems to have died before the monument was completed. As there is no mention of royal ancestry we may conclude that he was an usurper.

The only interesting piece of information it contains, is that DHAVA's arms were employed against the *Váhlíkas* of *Sindhu*, who were combining their forces to invade his territories.

The *Báhlíkas* are generally admitted by the learned to be the Bactrians, or people of *Balkh* :—but here the expression *sindhorjítá váhlíká*, the 'conquered *Váhlíkas* of the *Sindhu*' proves, that at the time of DHAVA the Bactrian principalities extended into the valley of the Indus,—and it further proves what we have been led to suspect from the numerous coins with unknown Greek names in the *Panjab*, that instead of being totally annihilated by the Scythians 120 years before Christ, the descendants of the Greeks continued to rule perhaps for a century or two after Christ, in the regions south of the *Paropamisar* range. If the authority of a graven monument of high antiquity be received as preferable to the variable readings of books, we should correct the वाह्लिका and बह्लिका of the *Ramáyana* and of HEMACHANDRA's lexicon, to वाह्लिका.

As in the *Allahabad* inscriptions, the pillar is called 'his arm of fame,' and the letters engraved thereon are the typical cuts and wounds inflicted on his enemies by his sword writing his immortal fame ! Rájá DHAVA has left behind him at any rate, a monument of his skill in forging iron, for the pillar is a well wrought circular shaft of iron, longer and nearly as large as the shaft of the *Berenice* steamer !

Here follows the text as corrected by KAMALÁKÁNTA, in a few letters, which will be seen on comparing it with the plate ; the translation I have kept as nearly literal as it can be rendered, which makes it difficult to follow.

Transcript of the Delhi Iron pillar Inscription.

- 1 येनाद्भयतः प्रती कमुचि(तान्) शत्रून् समेत्यागतान्नेष्वाहव
वर्तिनो विनिश्चितं खड्गेन कीर्तिर्भुजं । १
- 2 तीर्त्वा सप्तसुखाधिपेन समरे सिन्धोजिंतावाहिका यस्याद्याप्यधि
वास्यते जगविधिर्वीर्याग्निर्तै रक्षिणः ॥ १ ॥ २

Received at the Librarian
Washington from an author
impression taken by Capt.
T. J. Burd. Eng. 2 April 1858.

[illegible]

ਸਕੂਲ ਪੜ੍ਹਾਈ ਨੂੰ ਠੀਕ ਢੰਗ ਨਾਲ ਪੜ੍ਹਾਉਣ ਲਈ

ॐ नमो भगवते वासुदेवाय ॥

ਪ੍ਰਯੋਗ ਸ਼ੂਨ ਵਾਧਿਕ ਪ੍ਰਮਾਣਿਤਾ ਏਕਚਿਤ੍ਰਿਤ੍ਵ ਸ਼ਿਖਰਤ੍ਵਕ ਸਮਾਪਤ ਕਰਤੁ ਪ੍ਰਸਤੁਤਿ ਸੰਪ੍ਰਿਤ੍ਰਿਨ

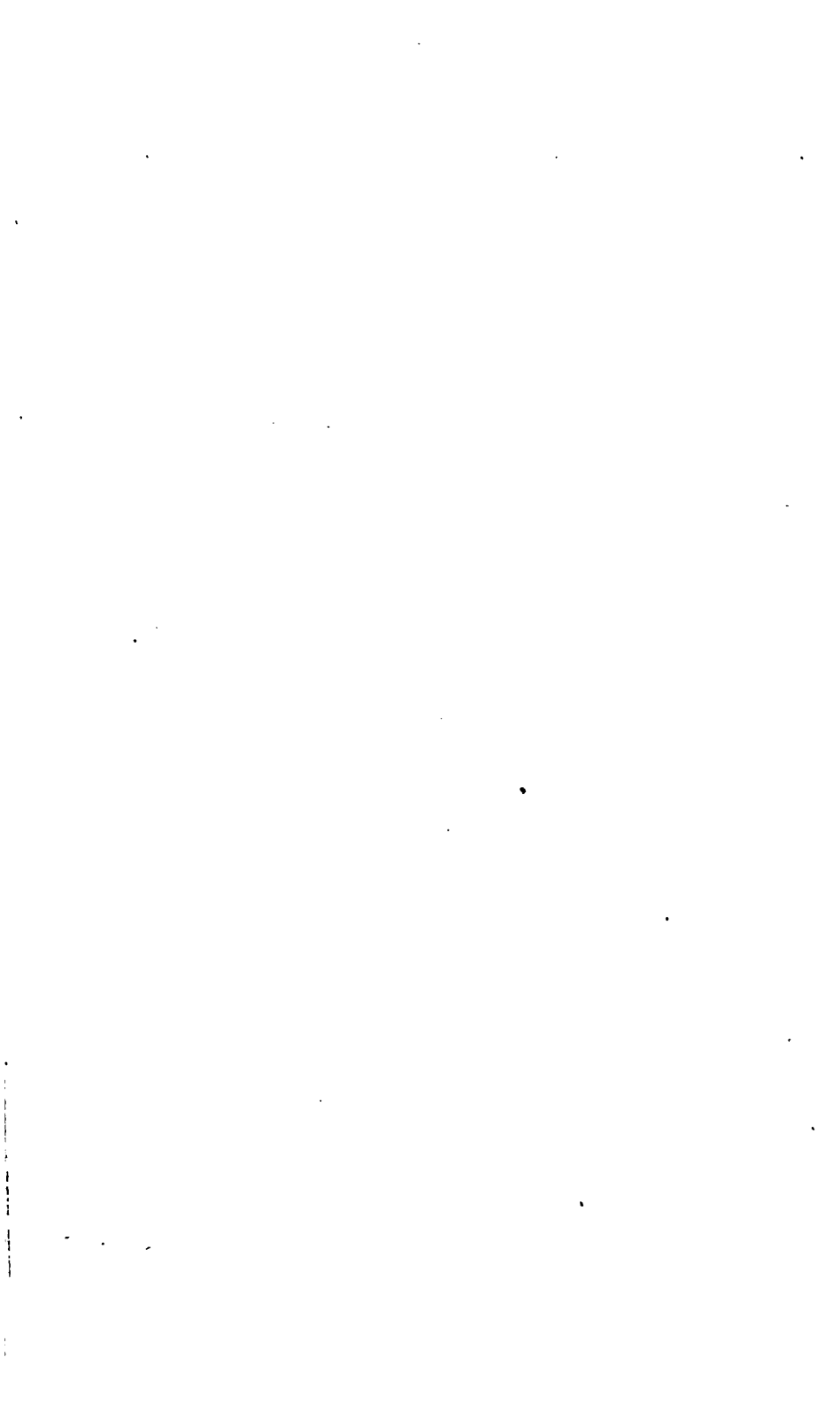
ॐ नमो भगवते वासुदेवाय ॥

INSCRIPTION ON A LONG STONE FROM THE FORTRESS OF SINGAPORE.
IN TWO LINES.

अवस्थां संकुच्य कौटिल्येन मने भविष्यदादयो। मेमिंद्रित्वा पत्रकः पिंपतय वृणोत्यादि शक्तुलेका यः मेरवीरी दीपः
प्रवर्त्तिरिवै गविरिति कल्पकल्यान्नाद्युत्तराबाभूनु कुरुकथये वेदशक्ति वृष्टम् नमी कुपुम् नदी त्वमासा यहिदीपिता ज्ञापिता ८
नोमेमिन्द्रित्वा विष्णुभीमस्य दगे यथा यथा परस्परमकारे पामे के यो कृत्य कृत्य स्त्री रास्य अयदा यो कृत्य यो निर्वयं गा सु रि लिखि ३
एतरेहो निन सा हि कपोल मवीता गारुडोर स च य विवर्त्ति ॥ स ये क ह म दाना यं भा व क्तु लिखा नि ब का (५४००२) ७

[illegible]

A. Cunninghamham des.



- 3 सिंहस्येव विदुष्य गां वरपतेर्माभासितस्योत्तरं मूर्त्ता कर्म्मचिता
वनिधुर्तवतः कीर्त्ता स्थितस्य क्षितौ । २
- 4 ज्ञान्तस्येव महावनेवतभुजे यस्य प्रतापोमहाभासाप्युत्पन्नतिप्रभा
क्षितरिपोर्यत्रस्य जेयः क्षितिं । २ । ३
- 5 प्राप्तेन सम्भुजाभितक्ष सुधिरसैवाधिराज्यं क्षितौ चन्द्रार्णेव समग्र
चन्द्रसदृशीं वक्ष्मिषं विभता । ५
- 6 तेनायं प्रविधाय भूमिपतिना धावेन विष्णौ मतिं प्राङ्मुर्विष्णुपदे
क्षितोभमवतोविष्णोर्भुजः स्थापितः । २ । ६

Translation.

"1. By him, who learning the warlike preparations and entrenchments of his enemies with their good soldiers and allies, a monument (or arm) of fame engraved by his sword on their limbs,—who, a master of the seven advantages*, crossing over (the Indus ?) so subdued the *Vāhlikas* of *Sindhu* so that even at this day his disciplined force† and defences on the south (of the river) are sacredly respected by them.

2. Who, as a lion seizes one animal on quitting hold of another, secured possession of the next world when he abandoned this,—whose personal existence still remains on the earth through the fame of his (former) deeds, the might of whose arm, even though (he be) now at rest (deceased), and some portion too of the energy of him who was the destroyer of his foes,—still cleave to the earth.

3. By him, who obtained with his own arm an undivided sovereignty on the earth for a long period, who (united in himself the qualities of) the sun and moon, who had beauty of countenance like the full moon :—by this same *rāja* *DHAVA*, having bowed his head to the feet of *VISHNU* and fixed his mind on him, was this very lofty arm of the adored *VISHNU* (the pillar) caused to be erected."

Inscription from a temple of Varāha and a Dhvajastambha in the vicinity of Erun or Airan in Bhopāl.

Lieutenat CONOLLY and Captain BURT started from *Mhow*, on an exploring journey. They continued in company as far as *Shore*, where some copper-plates in Mr. WILKINSON's possession occupied the atten-

* The *Septa sukhdni* are the same as the *septāṅgani* or seven limbs of government, explained in the last inscription.

† *Janevidhi*, the pandit thinks to be 'a military post.'—I prefer simply disciplined body of men, or discipline.

tion of the former, while the latter hearing of a pillar at *Airan* hastened off by dāk to visit it, and was rewarded with the two inscriptions which follow, and a few insulated names in various styles from the *Airan* pillar and temple. Of the monuments he has kindly promised a full description; the history of their origin as derived from the inscriptions themselves however may be succinctly told :—

The temple was built by DHANYA VISHNU the confidential minister of rája MÁTRI VISHNU the son of HARI VISHNU, grandson of VARU'NA VISHNU and great grandson of INDRA VISHNU; in the first year of the reign of rája TÁRAPÁNI of *Suráshtra* (?) : and

The pillar was erected by VAIDALA VISHNU the son of HASTI VISHNU, also grandson of VARUNA VISHNU, and at the cost of DHANYA VISHNU on the 14th of Asarh in the year 165, in the reign of BUDHAGUPTA in *Suráshtra*, comprehending the country between a river whose name, though partially erased, may be easily made out as the *Kalinda* or *Jumna* and the *Narmada*, or *Nerbudda*.

Here is a new scion of the GUPTA race of kings to be added to our lists, and a well defined date, if we could but determine by what era it should be interpreted. As yet however we must leave this point unsettled, until, by comparison with other records, we may be able to arrive at the solution of the problem.

Transcript of the inscription on the Varáha image.

जयति धरण्युद्धरणे घनघोषाघातघूर्णितमहीध्रः । देवो वराहमूर्तिं
स्त्रिलोक्यमहागुह्यममृतमः ।

वर्षे प्रथमे पृथिवीं पृथुर्कात्तौ पृथुद्युतौ महाराजाधिराजकीतार
पाणे प्रशासति फागुनदिक्से दशमे इत्येवंराज्ये वर्षमासदिनैः एतस्य
पूर्वे यशःखलक्षयस्त्रुत्तपूर्वयागस्त्रुत्तनिरतस्य क्रतुयाजिनोऽधीतस्त्रा
ध्यायस्य विप्रर्वैर्भ्राययायस्त्रुत्तभस्त्रुत्तविष्णोः प्रपौत्रस्य पितुर्गुह्यानुक्ता
रिणो वरयविष्णोः पौत्रस्य पितरमनुजातस्य स्ववंशवृद्धिहेतोर्हरिविष्णोः
पुत्रस्य अत्यन्तभगवद्भक्तस्य विधातुरिच्छया स्वयंवरयौवराज्यराज
कदम्बधिगतस्य चतुःसमुद्रपर्यन्तप्रथितयशसः अक्षीयमानधनस्थानेकशत्रु
समरजिष्णोः महाराजमाद्विष्णोः स्वर्गतस्य आतुर्वर्णेन वेदगविधाधिना
तत्प्रसादपरिगृहीतेन धन्यविष्णुना तेनैव . . . विभक्तपुण्यक्रियेण माता
पित्रोः पुण्याप्ययनार्थमेवं भगवतो वराहमूर्तेर्जगन्नायकस्य नाराय
णस्याशीर्षेप्रासादः स्वविषयेस्मिन्नेरिक्तोऽपि कारितः । स्वस्वस्तुग्राह्यपुदे
शान्याः सर्वप्रजस्य (च) इति ॥

45. Soc.
 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838.

Taken from the Stone by Capt. T. S. Burt. Eng^r



Translation.

"He is victorious! the boar-shaped god, who at the time of delivering the earth whirled round the mountains by the jerk of his tushes; from the increase of whose body have proceeded the three regions.

When the great *rāja* *TĀRAPĀNI*, the very famous and beautiful, the king of kings, governed the earth; in the first year of his reign, on the tenth day of *Phālguna*:—before his time the well known *DHANYA VISHNU* the doer of many virtuous deeds, follower of the injunctions of the *vedas*, obedient to his brother the late great *rāja* *MĀTRI VISHNU* (since departed to heaven) and favored by him—who obtained the good fortune of the regency by public election, and through the grace of God;—famous as far as the four oceans, ever respectable, and victorious in many battles with his enemies, the devoted worshipper of *Bhagavān*,—who was the son of *HARI VISHNU*, resembling his father,—the grandson of *VARUNA VISHNU*, possessor of his father's qualities,—great grandson of *INDRA VISHNU* of the *Maitrāyanāyākṛīpabha* race, the illustrious and distinguished, observant of his religious duties and sacrifices with *Sukta* (a hymn of the *Rigveda*)—a regular sacrificer, well read in the *vedas*, and a *rishi* among the brahmans.—By him (*DHANYA VISHNU*) was caused to be erected this new temple of *Jagan-Nārāyana** *Nārāyana*, in the form of *VARA'HA* (the boar incarnation) at his own village of *Nerikona*, in the reign, year, month, and day aforesaid.

Glory to the mistress of *Brāhmanapura* and the king to whom all the people belong! (?)

Inscription on a pillar near the same.

जयति विभुस्तुर्भुजस्तुरखं विपुलसज्जितपर्यङ्कः जगतः स्थित्युत्पत्ति (जय) हेतुर्गह्वरेतुः । शते पञ्चदश्याधिकवर्षाणां भूपतौ च बुधगुते आषाढमासे त्रयोदश्यां† सुरगुरोर्दिवसे संसरतं कानिन्दी नर्मदयोर्मध्यं पाकयति लोकपालगुणैर्जगति महार्हं श्रीयशोभावति‡ सुराधिपन्ने च अस्य संवत्सरे मासदिवस पूर्वोयं स्वकर्माभिरतस्य क्रतुयाजिनो अधीतस्त्राधावस्य§ विप्रवैर्मात्राययत्तपभस्येन्द्रविष्णोः प्रपौत्रेण पितुर्गुणानुकारिणे वरदविष्णोः पौत्रेण पितरमनुजातस्य स्ववंशवृद्धिहेतोः

* Or *Nārāyan* who is himself the water of the universe.

† The word is written corruptly *tryordasyān* in the original.

‡ In the original it appears, समुन्मावति on whom is the splendour of *Yamunā*.

§ In the original corrupted to स्त्राधायस्य.

हंरिविष्णोः पुत्रेष्वात्युद्धतेन भगवद्भक्तिना विधातुरिच्छया स्वयंवरयौव
 राजकन्द्यधिवृतेन चतुःसमुद्रपर्यन्तप्रथितयज्ञसा अक्षीकमानघनेन
 इन्द्रविष्णोः प्रपौत्रः मातृविष्णुः तस्यैवानुजातेन वैदवविष्णवभिधेयेन
 [तस्यादर....] तेन धन्यविष्णुवितेन मातापित्रोः पुत्राहितमनसा
 भगवतः पुण्यजनाईनस्य जनाईनस्य अजस्रमोऽभ्युज्जितः । स्वस्वसु
 पौरजनानुरागस्य सर्वप्रजस्य [च] इति ।

Translation.

"He is victorious ! (VISHNU) the four-armed, omnipresent, the creator and preserver of the world, whose bed is the immense water of the four oceans and whose *ratha-ketu* (chariot standard) is Garúḍa.

On Thursday the thirteenth lunar day of the month of A'shaḍha of the year 165 when the king BU'DHA GU'PTA who was the moon of good administration, and resplendent in fortune and fame, governed the beautiful country situated between the *Kálinḍí* (Jumna) and the *Narmada*, by his good qualities (derived) from the *Lokapálar**. In the aforesaid year of his dynasty, in the very month and day aforesaid : one named VAIDALA VISHNU who was famous as far as the four oceans, ever respectable, who by public election and through the favor of God obtained the good fortune of the regency, who was devoted to *Bhagavón*—the son of the father-resembling HARI VISHNU ; grandson of the father's-talent-possessing VARUNA VISHNU,—the great grandson of INDRA VISHNU, of the *Maitrayanáyakripabha* race, a strict observer of his religious duties, regular in sacrifices, reader of the *veda*, a very *rishi* among brahmanst. By him (VAIDALA VISHNU) this banner-pillar was erected at the expense of DHANYA VISHNU,—for the prosperity of his race, in honor of JANÁRDANA† the distresser of the *Púnyajanas* (*Rakshas*).

Glory ! to him who is a patriotic (prince) and to whom belong all the people !"

Besides the principal inscription on the *Eran* pillar, there are as usual several names scratched in different hands and at different times ; four of which I have selected as specimens, being the only ones in the more ancient form of Nágari. They are inserted at the foot of Plate XXXI.

A, the first, wants something at the end : supplying a *त* conjecturally it will run—

* Upholders of the universe.

† These several epithets are almost *literatim* the same in both inscriptions.

‡ VISHNU'.

SMALL INSCRIPTIONS FROM THE ERUN PILLAR, near SAUGIR.

१ कै नमः नमः नमः नमः नमः नमः
 २ अथ नमः नमः नमः नमः नमः नमः
 नमः नमः नमः नमः नमः नमः



कलभुजशम्भुशङ्खेनोत्कीर्णं सुकृतं

"Well executed in sculpture, by *Kalābhujā Shambhu* the *Shāṅka* or stone-cutter."

The second, marked B, is hardly legible in the middle, but I think it may be read :

सामन्तपौत्रेण सेनान्या लिखितं

"Written by *SAMANTA PAUTRA* (the grandson of the general)—the captain."

The third, C, is very plain and distinct सामन्त दोषज्ञ नाम, "the name of *Samanta Dosha*:" but I should be inclined to think the 'व' intended for a ब, and the name *Samanta deva*, as *dosha*, (a fault) would hardly be applied as a name.

The fourth, D, is insignificant; the letters are all plain, but the sense incomplete खतेन वैकीर्णे (न लिखितं) 'written by *KHATA* the son of the unfortunate.'

Inscription from Ghosi near Jaunpur.

Captain CUNNINGHAM has furnished no further particulars of this fragment than are contained in the heading of the facsimile, a long slip of paper taken from a detached stone stated to be broken off at either end. After an invocation to *HARI VIṢṆU*, it commences the usual eulogy on the glorious exploits of a *rāja* named *DHARANI VARĀHA*, and from the style there must evidently have been a long sequel, which if it could be recovered might give us some new information on a period not long anterior to the Muhammadan invasion.

Being in verse, the pandit who assisted me in deciphering it has been easily able to supply the hiatus in the first line. I have blundered in copying the facsimile, but by the letter references the order of the lines may be traced.

वमः । संशान्तेर्नम्यतार्थे दिशिदिशि विद्यते पार्थिवे भावभावे आसी
 द्वयोऽक्षयकः क्षिप्रतमनुमतो योगनिद्राच्छेन । यः स्फारस्फारवीर्यैः
 प्रवचदविजगन्निर्दमन् कल्पकल्पे सोयं पर्यङ्गवज्रो हरतु भवभयं देव
 देवोद्धरिभ्यः ॥ १ ॥

आसीन्मृगः खयशसा परिदीपिताशः संमृष्टा शत्रुहृत्पतेः भियमस्त
 दोषः । सन्तोषयन्निगमुञ्चे ज्वरबीवराहनामान्धभूमिपतिनिर्दयकञ्च
 यत्नः ॥ २ ॥

सेनाज्ञा निष्क्रमन्ती समदग्जघटाटोपद्वयान्तकारिण्यङ्गदेदोऽन्ना
 ष्चसुतवधिरवसामेदसा पङ्क्तिरेत्य । हेत्योर्वैर्हेतिसङ्गादगितिभिदि
 तद्विद्योतिताशाविभागे आनीता राजजक्षीरसद्वदरिवधूवत्तया साद
 रेव । ३ ।

सन्वाहं माचक्रन्ति तिस्रः.....कम्भ इव न सोमधरा
विभो विभावं यो

Translation.

"Adoration ! (May he) who, when on all sides all earthly things were destroyed (by the deluge) floated under the semblance of a sleeping yogi to the insulated fig-tree which alone remained for the redress of the calamity;—who with ever increasing strength subdueth the sun-scorched earth at the end of every *kalpa* ;—may he, girding up his loins, remove from you the fear of the world,—HARI the god of gods !

There was a *rāja* named DHARANA VARĀHA illuminating the horizon with the fame of his appropriating the prosperity of his enemies ;—satisfactory in qualities ; without blemish ; and renowned for subduing other kings.

By his army whose elephants, well trained and of moistened temples, darkened the horizon, as they rushed to the battle-field miry with the blood, marrow and serum of mangled limbs,—whence the sparks of the concussing battle-axes (*peti*) flashed like lightning on all sides—by this army has he brought back the royal *Lakshmi* with the respect due to the wives of his enemies !"

(The rest mutilated and unintelligible).

VI.—*Additions to Bactrian Numismatics, and discovery of the Bactrian Alphabet.* By JAMES PRINSEP, Sec. As. Soc. &c.

It is not an easy matter to gratify my numismatological readers with a plate of entirely new Bactrian coins so frequently as they would wish ; for, independently of the time and labour requisite for engraving them, the subject, as to new names at least, may be looked upon now as nearly exhausted. Opportunities however still occur of verifying doubtful readings, of supplying names where they were erased or wanting in former specimens, and of presenting slight varieties in costume, attitude, and other particulars, which tend to complete the pictorial history of the Bactrian coinage.

For these several objects I enjoyed a most favorable opportunity during the visit of General VENTURA to Calcutta last winter ; his second

collection, though possessing few types or names absolutely new, boasted of many very well preserved specimens of the small silver coinage of MENANDER, APOLLODOTUS, LYSIAS, ANTIMACHUS, PHILOXENES, &c. The General most liberally conceded to me, from his abundant store, several that were wanting to my own cabinet both of silver and copper, and he placed the rest also at my disposal, to draw, examine and describe as I might feel inclined. Unfortunately I refused to take charge of the Indo-Scythic gold series for examination, finding nothing particularly new among them, the consequence of which was that the whole were stolen by some sharper at the hotel where the General was residing, and none have been since recovered! I am now speaking of last January!—Since then I have received a coin and drawings of several others from Genl. COURT;—also two or three from Genl. ALLARD; and latterly the whole produce of Capt. BURNES' search in the neighbourhood of *Cabul* has been entrusted to my care. It is the very latest arrival from him, (or rather from a valuable member of his expedition, Dr. LORD,) consisting of two beautiful coins of EUCRATIDES, that stimulates me at once to give forth all that have accumulated in my Bactrian drawer since I last wrote on the subject. I must give Dr. LORD's coins the first place because one of them is perhaps the most curious and important that has yet fallen into our hands.

Plate XXVII. contains etchings of both of these coins to which I would thus draw prominent attention :—they are copied from sketches faithfully executed by M. MASSON, aided by sealing-wax impressions enclosed in Capt. BURNES' letter to me, which were however partially injured by their long journey. Dr. LORD thus describes the place and circumstances of their discovery.

“ I do myself the pleasure to forward drawings, of two coins which (with many others of less value) I have been so fortunate as to find during my late visit to *Turkistan*. The drawings have been made by Mr. MASSON but should they not prove sufficient I shall be happy to forward you not only these but all my stock for examination. The double-headed coin I found at *Tash Korghán*, the other at *Kunduz*.”

Having been kindly promised a sight of the coins themselves, I have purposely reserved space in the plate for the insertion of facsimiles to be hereafter executed by my medal-ruling machine.

Figure 2. I need not particularly describe as, though new to us, it has been published from other specimens in *France*. The reverse has a naked figure of APOLLO in lieu of the DIOSCURI.

Fig. 1. Is an unique medallion (that is, a tetradrachma) of EUCRATIDES.

Obverse. A fine youthful head and bust of the king wearing a plain steel helmet, with the bands of the diadem protruding behind. On the area above and below—*ΒΑΣΙΛΕΥΣ ΜΕΓΑΣ ΕΥΚΡΑΤΙΔΗΣ* in the nominative case.

Reverse. Busts of a man and a woman looking to the right: hair simple and without diadem; legend above *ΗΛΙΟΚΛΕΟΥΣ*, below *ΚΑΝΟΔΙΚΗΣ*.

Supplying the word *was*, we have here the parentage of *EUCRATIDES* developed in a most unexpected way: 'The great king *EUCRATIDES*, son of *HELIOCLES* and *KANLODICE*.' The former is a well known Greek name, but it is evident from the absence of title and diadem that he was a private person, and yet that his son having found his own way to the throne, was not ashamed of his unregal origin. The name of his mother, *KANLODIKE* however, is unknown and is decidedly not Greek. From the sound I have little hesitation in hazarding that it is the Sanskrit name *कमलाधिका* *Kamalādhikā*,—meaning 'superior to *Kamalā*, or *VENUS*, (alias 'fairer than the lily.') This name in the vernacular of the present day would be pronounced exactly as the Greek legend has it, *kauñla* a lily, *kauñlādhikā*, and I think, bearing in mind our other evidence of the state of the vernacular dialects in the date of *ASOKA*, there can be little doubt of such being the correct derivation of the anomalous name thus adopted into the Greek.

EUCRATIDES then was the son of a Greek officer married to a lady of the country, whom we may set down as of Hindu parentage and language; and we may thence argue that a dialect mainly derived from the Sanskrit was then used in Bactria, or at least in the Panjāb, as in the present day, though now diluted to a large extent with Persian and Arabic introduced along with the Muhammadan religion.

In further proof of this position, we can now also adduce a *Pāli* inscription in the old character procured by Captain *BURNES* from the northern side of the great chain of mountains, near *Badakshān*; (which will be published in Plate XXXV. of the next number,) to say nothing of the *Pāli* reverses of the *Agathocles* and *Pantaleon* coins from the same region.

The natural inference is that we should seek the explanation of the legends on the reverses of the Bactrian coins rather through the medium of *Pāli* or *Zend*, as I attempted in 1835, than as has been preferred by *M. JACQUET* of Paris, through the medium of Syriac and Chaldaic, with what success I have not the means of judging*.

* It will be proper here to notice that, in 1836, *M. JACQUET*, obligingly forwarded to me a lithographed page of his readings of the Bactrian alphabet and

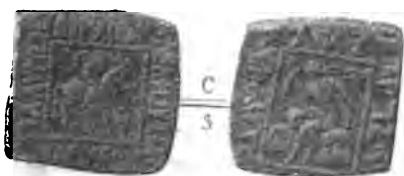
BACTRIAN COINS.



NOTE.—Since the accompanying page was printed off, I have received a letter from Captain CUNNINGHAM who, having Dr. LORD's coin under his eye, is convinced that the reading *Kanlodis* is erroneous. He was first struck with the slanting stroke of the letter *N* being placed in a wrong direction. (N. B. This is not the case in Mr. MASSON's drawing of the coin, whence the engraving was exactly copied. There was nothing therefore to raise suspicion of its correctness in my mind, as the sealing-wax impression had been flattened by the journey, over half of this very name.) On minuter examination the first stroke of the supposed *N* appeared to Captain CUNNINGHAM to be detached from the rest. He therefore read it as the *I* of *KAI* and the remainder then became very clearly *ΛΑΟΔΙΚΗΣ* the genitive of a genuine Greek female name.

I have not the smallest doubt that Captain CUNNINGHAM is right, although in the sealing-wax impression before me, the *IA* are actually joined below, and there is no cross stroke to the *A* of *ΛΑΟΔΙΚΗΣ*.

My speculations therefore of the Indian origin of EUCRATIDES' mother fall to the ground; and the reader is requested to pass over them. The unregal station of his parents still remains a matter of probability, on the grounds urged in the text.





I have long been pledged to my readers (and to the critics of the Meerut magazine in particular) to give them a new alphabet for these Bactrian legends, and I think the time has now arrived when I may venture to do so; or at least to make known the modifications which have been elicited by the abundance of fresh names and finely preserved specimens which have passed under my eye since that epoch. It must be remembered that the only incontestable authority for the determination of a vowel or consonant is, its constant employment as the equivalent of the same Greek letter in the proper names of the Bactrian kings. Beyond this we have only analogies and resemblances to other alphabets to help us, and the conjectural assumption of such values for the letters that occur in the titles and epithets of royalty as may furnish an admissible translate of the Greek in each and every case.

It will be my object presently to shew that this can be done, as far as the coins are concerned, by means of the Sanskrit or rather the *Páli* language; but in the first place it will be more convenient to bring forward my revised scheme of the alphabet as far as it is yet matured. Unfortunately the exceeding looseness of orthography and kalligraphy which could not but prevail when one foreign language, (for such it was to the Greek die-cutters), was attempted to be rendered by the ear in another character, equally foreign to the language and to the scribes, that with abundance of examples before me it is impossible to select the true model of some letters for the type-founder!

I begin with the initial vowels:

١, *a*. This symbol continues to occupy the place of the vowel *a* in all the new names, lately added to our list, beginning with the Greek *Α*, of which we have now no less than seven examples. The other short initials appear to be formed by modifications of the alif as in the Arabic: thus.

٢, *ī*, is constantly employed for the *ε* of Greek names.

٣ *u*, is found following it in the word Eucratides, as though put for the Greek *Υ*, but other evidence is wanting.

٤, *i*? though seldom met with on the coins is common in the inscriptions, and by analogy may be set down as *i*.

٥ and ٦, *ā*, *an*, is employed in words beginning with *AN*.

The medials seem to be formed in all cases by a peculiar system of

names. In the modifications I now propose, however, I do not borrow one letter from his list, because in fact he has followed quite another track. His reading of 𐎧𐎺𐎠𐎿 is, *myrvā*, a Syriac word I believe for prince or noble. It was this which led to the expression of doubt of my own former alphabet, and to the just satire thereon in the Meerut Magazine.

diacritical marks; of these the *i* is the best determined, being found applied to almost all the consonants in the form of a small stroke crossing the letter. The *á* is uncertain; it may be a prolongation below in the *r*,—a foot stroke or *mátra*. The *e*, I judge from the *Manikyala* inscription, to be a detached stroke behind and above; in a few cases only joined. The *u* may be the loop so often seen at the foot of the written letters. Thus we have ṽ *ka*, ṽ *ká*, ṽ *ki*, ṽ *ke*, ṽ *ko*? ṽ *ku*, &c. I feel it to be a little premature thus to assign sounds without any positive authority: but it was from a similar assumption of the value of its vowel marks, that I was led to the discovery of the Indian pillar alphabet.

With regard to the consonants, I ought perhaps to follow the order of the Hebrew alphabet, but as the *language* to be expressed is allied to the Sanskrit, it may be more convenient to analyze them in the order of the latter.

ṽ, *ka*. This letter on further scrutiny I find invariably to represent *κ*; and its place is never taken on the coins by ṽ as I formerly supposed. It occurs also with the vowel affix *i* as ṽ *ki*; also, but seldom, with the *u*, as ṽ *ku*; and with the subjoined *r* as ṽ *kra*. In the compounds, *kla*, *kli*, a form is adopted more like the Hebrew *q* (quere *ך*) ṽ, *ṽ*: there are two or three examples in support of it.

ṽ, *kh*, is limited as such to the name of *Antimachou*—but I find it also representing the *g* in *Abagasou*. In the written tablets we have ṽ and ṽ and ṽ seemingly identical with it, yet the latter with the vowel *i*, *f*, is used in some places for *dhi* (intended for the inflected *t*?)—There is no small affinity between ṽ, ṽ, and ṽ, ṽ, the *kh* of the old Sanskrit written invertedly.

ṽ, ṽ, ṽ, *g* or *gh*?—I place these forms here because they occur several times in the tablets and they bear some resemblance to the *g* of the *Pehlevi*.

Of the Sanskrit palatials neither the Greek nor the Chaldaic alphabets contain any proper examples—the *ch* and *j* are modified to *z* and *ts*—which letters we must expect to find substituted for the Sanskrit class च छ ज ञ.

ṽ, ṽ, *cha*; ṽ, *chha*. The first of these forms is found at the close of a series of words terminating each in the same vowel inflection, *o*; which makes me suppose it to be the Sanskrit conjunction *cha*, uniting a string of epithets in the locative case. As yet I have no stronger argument for its adoption.

ṽ, or ṽ, *ja* (*tsa*?). The form of the Chaldaic *ts* *z*, agrees well with the first; indeed in many coins of *Axes* the Bactrian form is identical with

the Chaldaic ; I find that in every case this letter may be best represented by the Sanskrit य , and indeed in the early coins of *APOLLODOTUS*, &c. its form 𐎶 seems to be copied from the ancient Sanskrit य , reversed in conformity with the direction of the writing. The only inflection I have met with of this letter is यju .

I can make no discrimination between cerebrals and dentals ; because the Greek names translated have of course no such distinctions, but from the variety of symbols to which the force of d and t must be ascribed, I incline to think the alphabet is provided with a full complement, though it is in the first place indeed almost a matter of option which letter to call d , t , r , or n , they are all so much alike—thus for t we have 𐎠 , 𐎡 , 𐎢 , and 𐎣 , and with the vowel i , 𐎤 , 𐎥 , f .

As the equivalent of d again we have the same 𐎡 , 𐎢 , 𐎣 , and also 𐎦 , 𐎧 , 𐎨 : and for dhi 𐎩 , and 𐎪 , the former evidently 𐎤 with 𐎡 subjoined ; the latter quasi $tthi$ or ddi : sometimes it is nearer $\text{𐎥} ri$.

I do not attribute this ambiguity to the letters themselves so much as to the carelessness and ignorance of the writers, who might pronounce the foreign name *Apollodotus*, indifferently *Apalátada*, *Apaladata*, and even *Apalanata*. Being obliged to make a choice, I assume as in my former paper ;—

𐎠 , 𐎡 , for ta , whence $\text{𐎠} tá$, $\text{𐎤} ti$, 𐎡 or $\text{𐎢} te$, and $\text{𐎡} tra$?

𐎢 , tta , tha , $\text{𐎪} thi$, 𐎢 , or $\text{𐎣} the$, but in fact these forms are as commonly used for dh , and its inflections.

𐎦 , 𐎧 , for da , nda : $\text{𐎤} di$, $\text{𐎢} de$, $\text{𐎢} du$; $\text{𐎪} dh$, $\text{𐎩} dhi$.

𐎡 , 𐎢 , na . I do not perceive any indications of the other nasals, and indeed they seem to be omitted when joined to another consonant : but I find some thing corresponding to the *anuswara* attached below the vowel a , and before consonants it seems represented by m , as $\text{𐎡} mcha$? $\text{𐎡} mri$, $\text{𐎡} mba$?

$\text{𐎡} pa$. The first of the labials is one of the best established letters. It has been discovered also inflected as $\text{𐎡} pi$, $\text{𐎡} pe$; $\text{𐎡} pu$; and united with either h or s in $\text{𐎡} pha$ or $\text{𐎡} spa$: also with li in $\text{𐎡} pli$, and in other combinations which will be noticed as they are brought forward. I suspect further that in 𐎡 , 𐎢 , we have $pá$, and in 𐎡 , pra : but the data are uncertain.

𐎡 , 𐎢 , pha or fa ? I have no stronger reasons than before for continuing this value to 𐎡 :—it seems in some few cases to usurp the place of v ; it is inflected also, as $\text{𐎡} fā$, $\text{𐎡} fu$, $\text{𐎡} fra$.

𐎡 or α , ba ? is still undetermined ; in the doubtful name above quoted *ABARAXOT*, it seems to be replaced by 𐎠 or 𐎡 —the aspirate is also unknown.

◊ *ma* ♀. This letter admits of no doubt whatever ; but in the Menander form, ψ, I now recognise the inflection *me*, corresponding with the Greek name more closely.—*Mi* is written Ψ ; *má*, ♀ or Υ ; and Υ may be *mu*. The second or what may be called the printed form of *m* has a considerable affinity in form with the old Sanskrit ग or घ, whence it may be almost as readily derived as the Burmese form of Páli, ဓ.

Λ *ya*. This letter is unchanged : it invariably replaces *s*, and *y*, and sometimes *j* where the latter would be expressed by the Sanskrit य or ज. It may perchance have been modified from the letter, for in some examples it is turned up on the sides thus, ω; the inflected form Λ yi is of common occurrence : Δ *yu*, less common.

◌, ʎ, ʃ, *ra*. It is necessary to preserve these three representatives of *r* ; I incline to think that the prolongation below may be the *mātra* or the long *ā* inflection, *rá* ; for the first form is used in *Ermaious* where there is no intervening vowel. It is only distinguishable from *d* by the foot-mark of the latter, which seems to be often omitted notwithstanding : its inflections are ʎ, ʃ, ʃ, *ri*, *re*, *ru*.

◌, *la*. Further acquaintance has taught me that this is the only representative of *l* in Greek names : the instances wherein the *l* before appeared to be replaced by ʎ have been disproved by duplicate coins. The inflected form ◌, *li*, has numerous examples among our new acquisitions. ◌ *le*, also occurs in inscriptions.

Υ *va*, and ◌ *vi*, rest on strong but not undisputable authority, as will be seen below.

◌, ʎ, *ha*, has been removed from its former position as *h* on ample grounds ; and the value now assigned has I think equally strong support—though as far as Greek names are concerned it rests solely on the initial syllable of *Helioeles*, τ, *he*. There is, again a similarity worthy of remark between ◌ inverted, and the old Sanskrit *ha*, ह, ह.

Ϸ, *sa*. To this letter I gave the sound of *o* on the former occasion, because I found it the general termination of nominatives masculine in Zend and Páli—replacing the Sanskrit *visarga*, *ah* or *as*. Since then I have found the same letter (affected with the vowel *i*) in two Greek names as the equivalent of *si*, Ϸ, and I am too happy on other considerations to adopt this as its constant value ; whether the dental *s* of the Sanskrit will best represent it remains to be seen, but the nearest approximation in form occurs in the Hebrew ס *s* : there are certainly two other characters, ט, or ת, and ך, having the force of *s* or *sh*. The former I should presume to be the Sanskrit *sha* श from its likeness to the old form ष. The latter, ך, may be a variation of *h* for which it is sometimes used, but rather by change of the Greek *z* to *s*, than as being the same letter, for elsewhere it takes the place of the Greek *s*

as in AZIAIZOT, while Λ occurs for Z in the same word. In form it seems to be the Chaldaic π , or *th* soft. The inflections of these letters yet observed are, ϕ *si*, ϕ *se*; ρ *su*; η *shi*, η *shu*; and their combinations with consonants are numerous,— φ *sta*, η *stá*; φ *ma*?; η *sta*, η *mi*?

It will be naturally expected that the alterations I have been compelled to adopt in the value of many of the above letters must produce considerable modifications in my former interpretation of the Bactrian legends. Indeed when I look back at my attempt of 1835, I must confess that it was very unsatisfactory even to myself. I was misled by the *Nakshi-rustam* trilingual inscription, wherein the title of king of kings has been uniformly read as *malakán malaká*, though I balanced between this and the term *maharáo*, having found $\rho\alpha\omicron$ on the Indo-Scythic series. But, once perceiving that the final letter might be rendered as *sa*, which is the regular *Páli* termination of the genitive case, I threw off the fetters of an interpretation through the Semitic languages, and at once found an easy solution of all the names and the epithets through the pliant, the wonder-working *Páli*, which seems really to have held an universal sway during the prevalence of the Buddhist faith in India.

The best test of the superiority of a *Páli* interpretation will be found in its application to the several royal titles of the Greek kings, which were previously quite unintelligible. The first of these is simply ΒΑΣΙΛΕΩΣ which is constantly rendered by 𑀧𑀺𑀭𑀸𑀓 *maharájasa*, the *Páli* form of महाराजस. It is true that there is some doubt whether the long vowel *á*, is here applied to the *h* and *r*; but we have long since been accustomed to the omission of this and even other vowels in the Satrap coins of *Suráshtra*. The word is often written 𑀧𑀺𑀭𑀸𑀓 , whence I have supposed the dot or dash below to stand for *á*.

The next title is ΒΑΣΙΛΕΩΣ ΒΑΣΙΛΕΩΝ , which we find replaced by 𑀧𑀺𑀭𑀸𑀓 𑀺𑀭𑀸𑀓𑀺𑀭𑀸𑀓 *maharájasa rájarájasa*, a perfectly sound and proper expression according to the idiom of the Sanskrit. But in one class of coins, that of Azes, there are some very well preserved specimens in which the second part of the title is 𑀧𑀺𑀭𑀸𑀓𑀺𑀭𑀸𑀓 which is evidently *rájatirájasa* (or *adhi* for the letter has a turn at foot and may be meant for 𑀧𑀺𑀭𑀸𑀓 *dhi*), the regular राजाधिराजस of the paramount sovereigns of India. The syllable *dhi* is often written 𑀧𑀺𑀭𑀸𑀓 *ti*, 𑀧𑀺𑀭𑀸𑀓 *ri* or even 𑀧𑀺𑀭𑀸𑀓 *ti* or *gi* (?) but the vowel *i* shews what is meant.

To the title of king of kings is generally added on the Greek side the epithet ΜΕΓΑΛΟΤ , for which we have an addition in Bactrian of the word 𑀧𑀺𑀭𑀸𑀓 *mahatasa*, one of the forms of the *Páli* genitive of *mahán* (or *mahat*) great, which makes only *mahatah* महतः in Sanskrit. The full title then is thus found to be *maharájasa rájadhírájasa mahatasa*,

which is far preferable to the clumsy and unsatisfactory *malakao kak-kao malako* of my former paper, now rectified by the rejection of 𑀓 as *ka*.

The next title in the list is 𑀲𑀢𑀤𑀓𑀢𑀺, for which we have rather a dubious word of four letters either 𑀢𑀤𑀤𑀓 *dadatasa*, or 𑀢𑀤𑀤𑀓 *nandatasa*, the former equivalent to 𑀓𑀢𑀤𑀓: the bestower of *dāna*, a word comprehending protection as well as charity;—the latter to 𑀢𑀤𑀤𑀓: ‘of the giver of pleasure.’

The epithet of next frequency is ANIKHTO𑀢𑀺 the unconquered, which is translated by 𑀢𑀤𑀤𑀓𑀢𑀺 *apavihatasa* (Sans. अपविहत्तस्य) the unbeaten, or invincible. It is this word principally which leads me to make 𑀢𑀤𑀤𑀓 *sa*, and to distinguish it from 𑀢𑀤𑀤𑀓 *ti* and 𑀢𑀤𑀤𑀓 *ti*, with the latter of which I before confounded it.

Next in order comes the somewhat similar expression NIKH𑀢𑀺𑀢𑀺; but the correct definition of this epithet is preserved in 𑀢𑀤𑀤𑀓𑀢𑀺 *jayadharasa*, the bearer of victory. In one instance the *dh* is written separately 𑀢𑀤𑀤𑀓𑀢𑀺; in others (like the *dh* of *adhi*) it is 𑀢𑀤𑀤𑀓𑀢𑀺, *jaya-darasa*, but there can be little doubt of the sense; and this word is a strong confirmation of the value of the letter 𑀢, or 𑀢 *ja*.

There is a second epithet of nearly the same signification which is common enough on the Seleucidan coins, but comparatively rare in those of Bactria, NIKATOPO𑀢𑀺. This epithet was found on the unique coin of AMYNTAS of which Col. STACY was unfortunately robbed, and on one or two others. In the Bactrian translation the same word is used in every case as for NIKH𑀢𑀺𑀢𑀺, namely, 𑀢𑀤𑀤𑀓𑀢𑀺 *jayadharasa*, the possessor of victory, or the victorious.

There remains but one epithet to be accounted for (for 𑀢𑀤𑀤𑀓𑀢𑀺𑀢𑀺 of the APOLLODOTUS unique coin does not seem to be translated):—it occurs on the coins of HELIOCLES, SPALURMES, and ARCHELIES; I mean 𑀢𑀤𑀤𑀓𑀢𑀺 ‘the just’—a rare epithet in any but the Arsacidan line of kings.—This is everywhere rendered by 𑀢𑀤𑀤𑀓𑀢𑀺 *dhamikasa* (Sans. धर्मिकस्य) the exact expression required, and one constantly applied to Indian kings.

I am wrong in saying that the epithets are here exhausted, for on the unique coin of *Agathocleia* in Dr. SWINEY’s possession, there is a singular epithet 𑀢𑀤𑀤𑀓𑀢𑀺𑀢𑀺 ‘heavenly dispositioned,’ yet unaccounted for: of this the two or three first letters are lost, and the last two 𑀢𑀤 *tasa* may terminate *devamatasa* or some such simple translation. It is a curious fact that the name of the queen does not appear to be feminine in the Bactrian legend; and the title *mahārājasa* is also in the masculine.

There is another expression on a coin of *Spalurmes*, viz. “king’s brother,” 𑀲𑀢𑀤𑀓𑀢𑀺 𑀢𑀤𑀤𑀓𑀢𑀺 𑀢𑀤𑀤𑀓𑀢𑀺 𑀢𑀤𑀤𑀓𑀢𑀺, the Bactrian

but it may be doubted whether all these are not in reality the same name 𐎱𐎠𐎼𐎿 *Farahetasa* coupled with the title corresponding to 𐎶𐎳𐎡𐎹 written in a loose manner.

On the reverse of the coins of the second HERMÆUS (or perhaps the third) having a Hercules for reverse, commences another series of native names, forming what we have designated the *Kadphises* or *Kadaphes* group. After the change from 𐎡𐎹𐎡𐎻𐎶𐎵 on the obverse, to 𐎡𐎹𐎡𐎻𐎶𐎵 , we have still precisely the same reverse as before, and it is preserved through a numerous series;—the title of mahārāja is not to be found, nor is it easy to see where to commence either the Greek reading $\text{𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵}$ 𐎶𐎵𐎶𐎵𐎶𐎵 or the Bactrian $\text{𐎱𐎠𐎼𐎿𐎶𐎵𐎶𐎵𐎶𐎵 𐎱𐎠𐎼𐎿𐎶𐎵𐎶𐎵𐎶𐎵 𐎱𐎠𐎼𐎿𐎶𐎵𐎶𐎵𐎶𐎵}$ which may be transcribed *dhama + rata Kujalakasa sabashakha* (?) *Kadaphasa*:—in this reading if we can make out nothing else there are at least the two names *Kosoula* (also written *Kozulo* and *Kozola*) and *Kadphises* (also written *Kadaphes* and *Kadphises*) accounted for. The distinctions on the small coin of $\text{𐎡𐎹𐎡𐎻𐎶𐎵 𐎶𐎵𐎶𐎵𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵}$ I am unable as yet to make out for want of further samples.

Connected with the same family we then come to the long inscription on the *Mokadphises* coins which may be read by comparison of a great many examples:—

$\text{𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵}$

Mahārājasa rajadhirājasa sabatracha ihacha mahiharasa dhi mahadaphisasa nandata.

‘Of the great sovereign, the king of kings both here and every where seizing the earth, &c. MOKADPHISES, the saviour?’

I do not insist upon any of these epithets *sabatra mahidharasa*, for in fact they vary in every specimen. The *dhi* also looks in many coins more like *dha*, quasi *dhama Kadphisasa*. On some the reading is rather *sabalasa saviratasa mahichhitasa* (𐎡𐎹𐎡𐎻𐎶𐎵: sovereign?) On some gold coins again the name more resembles $\text{𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵}$ *vavahima Kadphisasa*, agreeing with the Greek 𐎡𐎹𐎡𐎻𐎶𐎵 𐎡𐎹𐎡𐎻𐎶𐎵 .

It remains only to apply my theory of the Bactrian alphabet to the inscriptions on the cylinders and stone slabs extracted from the topes at *Manikyāla*, &c. but this is a task of much more serious difficulty and one not to be done off hand as all the rest has been!—I must therefore postpone the attempt until I am better prepared with my lesson; and meantime I will proceed to describe briefly the contents of

Plate XXVIII.

Fig. 1. is a small silver Euthydemus in Captain BURNES' collection: it resembles exactly the medallions already published of the same prince. Weight, 62 grs. See Pl. XXV. Vol. IV. fig. 1.

In lieu of the head of HELIOCLES, the *obverse* bears an elephant, naked, walking to the left, Greek legend as above. The reverse is irrecoverably lost.

It is perhaps unnecessary here to retract my former doubts of the existence of a HELIOCLES in the Bactrian dynasty, since they have long been removed by the account of silver medals in France. We have as yet seen none but these two copper specimens in India, but the probability is that both silver and copper might be found in *Bactria* proper, to the north of the *Hindu Kush* or *Imaus*.

An opinion has been started by MIONNET in opposition to many European numismatists that HELIOCLES was no other than EUCRATIDES the second, the parricide. The surname of ΔΙΚΑΙΟΞ so unsuitable to such a character he supposes given through fear or adulation; which I agree with M. R. DE ROCHETTE in thinking too great an anomaly to be allowable: but without seeking to account for this staggering circumstance, we can now help M. MIONNET to a very powerful argument in his favor from the unique coin of Dr. LORD described in a former part of this paper, which proves that EUCRATIDES' father was a HELIOCLES; and we know that it was common to call an eldest son by his grandfather's name, as is indeed universally the custom to the present day both in eastern and western countries.

Fig. 9. I have introduced this duplicate of the single mutilated coin depicted in fig. 8. Pl. XXI. Vol. IV. among the then doubtful group, because General VENTURA's present specimen exhibits the name in the Bactrian, 'PA?, *ayasa*, and thus proves it to belong to the abundant series of AZES' coins.

Fig. 10. is a square copper coin of Lysias kindly added to my cabinet by General VENTURA.

It is in better preservation than any before published.

Obverse. ΒΑΣΙΛΕΥΣ ΑΝΙΚΗΤΟΤ ΑΥΓΙΟΤ. Head of LYSIAS, with diadem. MIONNET says of a similar coin 'représenté en Hercule, la massue sur l'épaule gauche'—but I do not perceive these characteristics very distinctly.

Reverse. Bactrian legend פִּהִיכַסָּא פִּרְלִיכַסָּא מַהֲרַאסָּא *maharajasa apavihatasa lisikasa*, 'of the unconquered king *Lisika*.'

I perceive that both MIONNET and M. RAOUL DE ROCHETTE give to LYSIAS the square coins of SPALYMES or SPALURMES; though there is no resemblance whatever between them. M. RAOUL DE ROCHETTE writes in the *Journal des Savants*: Mars 1836, p. 136:

" Cette autre médaille de *Lysias* diffère sous tous les rapports de celles que nous possédions déjà du même prince: elle est restée incon-

nue* à tous les savants et voyageurs Anglais qui, depuis plusieurs années se sont appliqués avec un zèle si louable à recueillir ces précieux monuments de la civilisation Grecque enfouis dans le sol de l'Inde : et l'exemplaire que nous devons à *M. le général ALLARD*, et que je publie, est encore unique. La fabrique, qui ressemble à celle de la médaille du roi anonyme, *que j'ai fait connaître*†, accuse sensiblement une époque de décadence, d'accord avec la forme carrée du Γ et de l'□ qui commencent à paraître sur la monnaie des Arsacides, à partir de Phraate III. à une époque qui doit s'éloigner bien peu de l'âge de notre Lysias. On pourrait voir un autre rapport entre cette monnaie Bactrienne et les médailles du même prince Arsacide, dans le titre de *juste*, ΔΙΚΑΙΟΥ, qui se lit habituellement sur les médailles de Phraate III. mais ce qui constitue ici la particularité la plus remarquable et la plus neuve, c'est la qualification d' *Adelphe*, ΑΔΕΛΦΟΥ, affectée par Lysias, &c."

When the mistake of attributing this coin to the wrong person is corrected, it is curious how perfectly the observations of the learned antiquarian of Paris confirm the conjecture to which I have been led by the deciphering of the Bactrian legend :—the coin is that of the 'son of a king *Spalahara* or *Balahara*;' in bearing the effigy of HERCULES it agrees with the corrupted coins of HERMÆUS II. and others of the Pherres or *Phrahetasa* (Phraates ?) type, which appear to belong to one family. M. R. DE R. agrees with our discoverer MASSON in locating them in an Indo-Greek dynasty at *Nysa*,—or near *Jelalabad*, where their coins are found in the greatest abundance.

I have purposely introduced an engraving of a very perfect specimen of this coin given to me by Mr. TREVELYAN who got it from MOHAN LAL, as figure 3 of Plate XXVII. It is ruled by the medal-ruling machine and is of course perfectly accurate, though indistinct.

It may be remembered that the name of VONONES is not found on the Bactrian side of his coins, but a totally different word, 𑀧𑀲𑀭𑀸𑀓 *Balaharasa* as I read it, or perhaps *Baláharasa* (बलारस) the patron of

* The drawing of the very coin described by M. R. DE R. was published by myself in June, 1835, but I did not deem the name legible, nor has it proved so at Paris, by their making Lysiou out of Spalurmou. I stated my reason for not publishing earlier to be, that I might not forestall the As. Soc. of Paris in describing General VENTURA's splendid collection.

† It is not obvious in what this great resemblance consists?—one coin is square, the other round :—one has a Greek legend only ; the other a bilingual one—the equestrian figure is the *obverse* in one, the reverse in the other. The anonymous coin was first published in the Asiatic Researches in 1831, and in the Journal for 1833 and 1834.

champions, a term nearly equivalent to 'Satrap.' Now on all the coins of SPALYRIES (or *Spalurmes*) hitherto found, the initial letter has been unfortunately cut off; but the three next are 𐎧𐎡𐎢 ... *lahāra* the same as above, wanting only the final genitive inflection: the next letters may be read 𐎧𐎡𐎢 *putasa* for (𐎧𐎡𐎢) 'of the son.' Putting the whole together we have 𐎧𐎡𐎢𐎧𐎡𐎢 𐎧𐎡𐎢𐎧𐎡𐎢 𐎧𐎡𐎢𐎧𐎡𐎢 (𐎧𐎡 *Ba*). *laharaputasa dhamikasa* *Balufaramasa* 'of BALAFARAMA (either for *Balaparama*, or 𐎧𐎡𐎢𐎧𐎡𐎢 whose strength is his armour) the just, the son of BALAHĀRA.' Therefore as he was brother of the cotemporary of VONONES, 'the then king' must also have been a son of the same person: and we should expect to find another coin of a somewhat similar type struck by him. These conditions are satisfactorily combined in the rude square coin of SPALIRISES, depicted in Plate XXI. vol. IV. and Pl. XXXV. of vol. V. fig. 7. He has the same flowing mantle from the shoulders, the sceptre of royalty, and his native name appears to be 𐎧𐎡𐎢𐎧𐎡𐎢 *Balirihasa*: thus the father's native name is *Balahāra*; the eldest son's *Balirihā*, and the second son's, *Balavarma*, and the copper money of the whole triad is distinguished for its exceeding rudeness no less than its conformability of type! The silver money of SPALURMES and SPALIRISES has not yet been found, or we might probably find that it maintained the name of VONONES the Parthian king, or his successor, on the obverse.

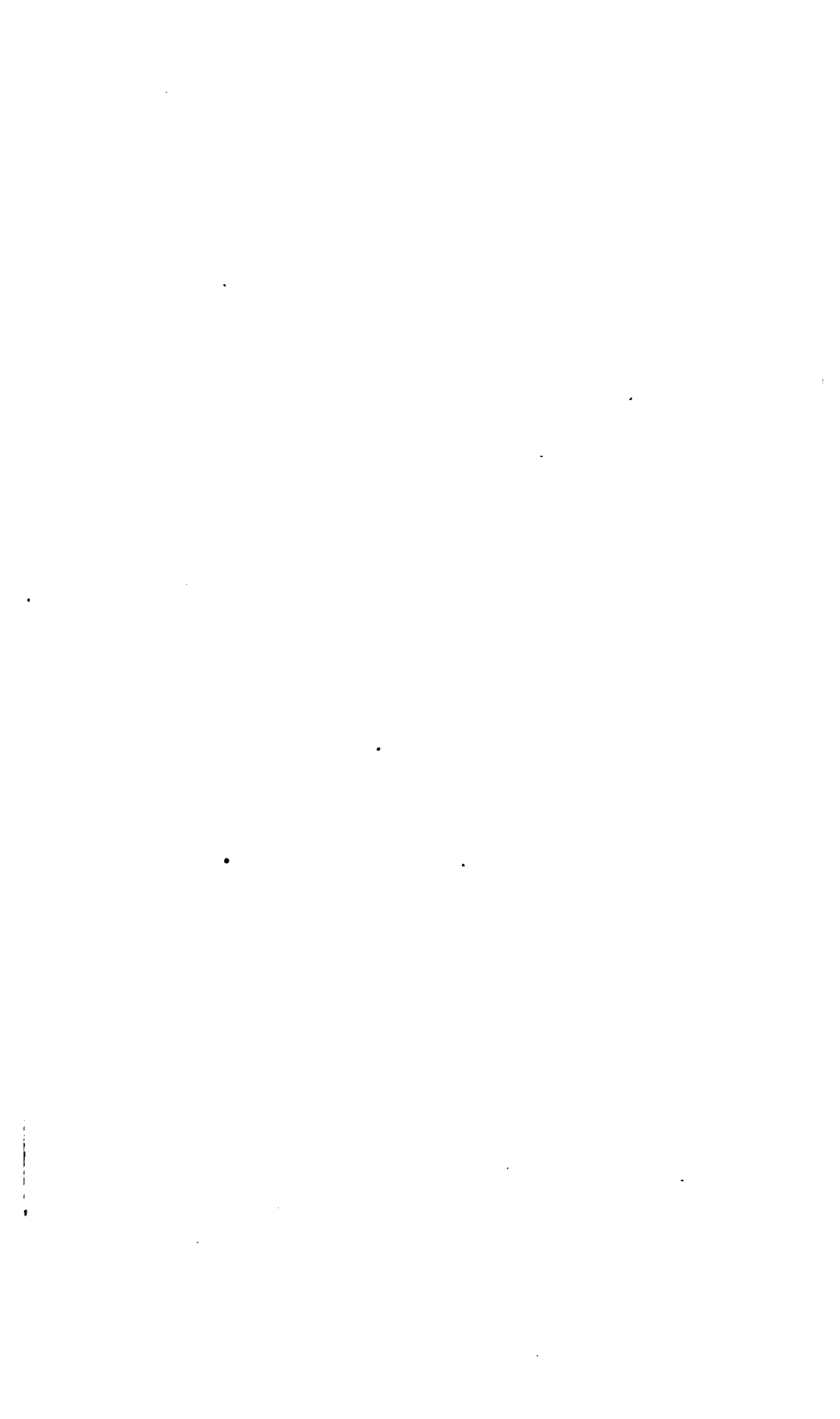
The style of these three names commencing with *Bala*,—and the title in particular of the first, *Balahāra*,—call to mind the *Balhāra* dynasty of north-western India, of which the epoch cannot be said to be yet well defined. One of the earliest foreign authorities the historian MASOUDI, who wrote in 947 A. D. says:—"The dynasty of *Phoor* who was overcome by ALEXANDER (had) lasted 140 years: then came that of DABSCHEIM, which lasted 120: that of YALITH was next and lasted 80 years, some say 130. The next dynasty was that of COUROE, it lasted 120 years. Then the Indians divided and formed several kingdoms; there was a king in the country of *Sind*; one at *Canouj*; another in *Cashmir*; and a fourth in the city of *Mankir* (*Minngara*?) called also the great *Houza*, and the prince who reigned there had the title of *BALHĀRA*.*"

$120 + 80 + 120 = 320$ years estimated from ALEXANDER's time brings us to B. C. 8, or allowing a few more years to PORUS say 10 or 20 A. D. Now the reign of VONONES I. as king of *Parthia* is dated by VAILLANT, from A. D. 6 to A. D. 20, so that the accordance of time is here perfect, and we need seek no other explanation of the paramount Persian sovereign's name and effigy on one side, while the other modestly bore that of his tributary, because we have witnessed the same

* WILFORD's Essay, Asiatic Researches, IX. 181.

Bactrian Coins.





merly read MAO, but on the new, and I think correct, system now adopted, it must be read *Má-asa*, or *Mayusa*, as near an approach to the Greek, or by the Greek to it, as the relative alphabets would allow. Of the name itself, I am inclined to identify it neither with *Maia* the mother of *Mercury* (though the caduceus favors this idea, and the Indian *Máyá* is also the mother of *Buddha*) nor with *Mao* as lunus,—though Chandra is a common name enough;—but rather with MÁYU (मायुः) the son of KUVĒRA, the god of riches, (whose name also is frequently adopted by princes*) and it may have been borne by a contemporary or successor of APOLLODOTUS who swayed the sceptre but a short period in some part of the Panjáb, if it is necessary to suppose them of the same age.

Philoxenes.

Fig. 12. A square copper coin in most respects agreeing with the former one, also of General VENTURA's collection, but having apparently a difference in the orthography of the Bactrian name. On comparing the drawing of the silver Philoxenes in the *Journal des Savans* with the rapid sketch I had taken of the same coin while in Calcutta, I perceive that I read the name and title wrong; which is my reason for inserting this better preserved coin:—the legend is clearly 𐎧𐎼𐎠𐎹𐎡𐎹 𐎧𐎡𐎴𐎡𐎹 *maharajasa apavihatasa plijasinasasa* (or *Philásinasasa*). On the silver coin the epithet is *apavihasasa* (quasi अपविहससा)—not to be laughed at! but I think the *s* must be a blunder.

M. RAOUL DE ROCHETTE judges from the military aspect of Philoxenes that he was a satrap placed with a regal title on the north frontier of the Bactrian kingdom when threatened by the Scythians, but the circumstance of none of his coins having been found by Masson in the upper field, while several have come to light in the Panjáb, would tend to contradict this hypothesis, as much as the '*Ceres Carophore*, or Abundance personified, and humped bull of his copper coin. This learned critic does not allow that the brahmany bull has any reference to India, because it is seen on the Seleucidan coins; but in the only specimen I have in my cabinet of a Seleucus with a bull reverse, the animal is altogether of the European breed.

Coins of the Axes group.

A great deal remains to be done ere we shall be able to clear the history of this numerous and interesting series of coins. Every day new types and varieties spring up, generally of tinned copper or bronze.

* See notes on the Allahabád inscription November 1837, page 972—*Pálsaka Ugrasena, devardshtraka* KUVĒRA. As the Parthian kings were styled *devejenis*, this country of the devas may have been in the north, as was indeed the fabulous country of KUVĒRA the god-king.

Fig. 13, is a specimen in good relief lately sent down to me by General ALLARD; there was another in the collection sent home by General COURT under care of M. MEUFREDY, of which I was favored with a sight of the drawing. On this the name on the Greek side was entire, and thence I am enabled to complete my description.

Obverse. BACIAEWC BACIAEWN MEFAAOV YNAOEEΠPOV,—rāja in a brahmanical dress, upper part of the body naked—on the head a turban (?) with flowing fillets. The small figure of victory holding a chaplet over him forms the peculiarity of the device of which there are yet but three samples. The monogram which was before so unintelligible to us, I now recognise as a combination of two letters of the old Sanskrit alphabet ४ and ॥ m and n*.

Reverse. Whether the figure in a brahmanical costume holding a trident in the right hand and a palm branch in the left is Neptune, Siva, the river *Indus*, or the king, I am not sufficiently initiated in the art to determine. No two reverses seem to be exactly alike though formed of the same materials; the legend on the present in Bactrian is

טולצק לעלצק פדעק פזלס פדעק

Maharajasa rajarajasa nandatasa jayadharasa (?) Farhetasa.

I do not pretend to be satisfied with the last epithet, nor with the name, which however I collate with M. COURT's. I have conceived it possible on a former occasion that it referred to **PHRAHATES** the predecessor of **VONONES**, or another of the same name: but there are too many uncertain letters in it to build theories safely upon. At any rate the same name of five letters here seen below the figure of **Siva**, is found on *all* the rude coins ascribed formerly to *Unad* (now corrected to) *Undo-pherres*, with exception of the penultimate letter which is there always formed like an *f*. פףףףף, *fara-ctisa*, (?) to which פףף *nandatasā* (soterōs) is invariably added—on M. COURT's coin this epithet may be preferably read פףף great!

On the area are two Bactrian letters Ḫ Ḷ , which might be profanely taken for 'six shillings' by an uninitiated handler!

Fig. 14. A variety of the same group, in General VENTURA's recent collection. In this the horseman looks in the opposite direction, and the beginning of the name ΤΝΑΟ*εppo is visible. The monogram is composed of 8 and J, — 8 mya.

On the reverse, a well clad female holding still the trident (though it looks more like the cross) walks to the left—a Greek and a Bactrian monogram on either side, of complex form : legend as before, the name below. ΠΥΣΦ.


* I may here note that fig. 14, Pl. XLVI. of vol. V. is also a coin of ὙΨΦ *Farhete*, with the letters  as a central symbol.

Fig. 15. Another novelty from General VENTURA's store, of which a duplicate has been sent to France by M. COURT.

In all respects but the name the obverse corresponds with the foregoing. The name in the two coins yet brought to light of this species is quite distinctly ΓCΝΑCΦΑΡCΥ, which is either another member of the family or a corruption of the last.

The erect front-faced figure on the reverse is dressed in the Hindu dhoti—and extends his hands over a new symbol of gridiron fashion—in his left hand is the trident. This figure has been conventionally styled 'Siva' when he appears with his bull on the Indo-Scythic coins. The native name is as before ΠΥΣΥ Farahetasa with the addition of ΠΥΞΥ netadharasa 'the bearer' of something not very intelligible unless we make the first syllable ΑΥ jaya, victory.

Referring to the observations in a preceding page about the brothers of VICRAMADITYA, I cannot forbear mentioning that in *Gondophares* we might almost recognize the father of VIKRAMADITYA himself; for in the word Gondo-phares we have a signification not very remote from *Gandha-rupa*; φάρος being pallium, vestis exterior,—the compound may mean 'having a cloak made of the skin of the *gandha, gonda, gor*, or wild ass.' Whence may have originated the fable of the Parthian king doomed to assume the guise of an ass during the day.

These are speculations certainly much in the WILFORD strain, but the curious coincidence in so many names is enough to lead even a matter of fact man aside from the justifiable deductions of sober reason.

Fig. 16, like the last adds a new name to the Bactrian list. The coin, a thick copper piece in tolerable preservation was sent down to me by General ALLARD a short time ago: it is as yet I believe unique.

Obverse. (βασιλεως βασιλεων μεγάλου) ΑΒΑΓΑΣ□Υ—'of the great king of kings Abagases:' there may perhaps be another letter before the Α. The king, known by the flowing fillets of his diadem, seems dressed in a petticoat, rāja fashion—and he sits sideways on a richly caparisoned horse, looking to the right. Monogram g as before, but with the Bactrian letter 7 beneath it.

Reverse. The same royal personage (by the fillets) as if performing the functions of high priest. The dress is so precisely Indian that I feel disappointed in not finding a regular Sanskrit name below; nor can I produce much of accordance between the Bactrian and Greek names—the letters are ΠΠΦΣΥΓ or ΠΠΦΣΥΗ *abakhafasa*. On the field are various insulated alphabetic symbols,—Bactrian and Greek, and under the latter, one which looks like a modern Nāgari न, π, but is more probably the Bactrian λ.

The last figure in the plate (from General VENTURA'S store) is a duplicate of the AZES coin published as fig. 22 of Pl. XXIII. vol. IV. (1835). Between the two one important fact is established, namely that at this period of the AZES dynasty the use of the Greek was entirely lost, while the native character was written with greater correctness in the same or rather the inverse ratio. The Greek legend is a mere jumble of letters, but the Bactrian reads continuously

𑀧𑀸𑀓 𑀧𑀺𑀲𑀺𑀲𑀺𑀲 𑀧𑀺𑀲𑀺𑀲 𑀧𑀺𑀲𑀺𑀲 𑀧𑀺𑀲𑀺𑀲

Maharajasa mahatasa dhamikasa rájotirajasa Ayasa.

'Of the great king, the mighty, the just, the king of kings, AZES.'

The figure of Abundance with her cornucopia has a compound symbol on the left which might be read *Sri*, her Indian name; and on the right the two letters ṣ *kha* and *dha*, used numerically?

The perfect Greek medals of Bactria proper, however beautiful as works of art, ought not to turn away our attention from these corrupted and 'barbarous' specimens which mark the decadence of Greek dominion and Greek skill. These are the most precious to the student of Indian history:—through their native legend he may yet hope to throw light on the obscure age of VIKRAMADITYA,—and the Scythian successors of the Greeks on the north of India. Hitherto these classes of rude coins, though very numerous, have been much disregarded, and on that account I now invite attention to them, and promise to return to the task myself when I have fresh materials collected and arranged; my text being 'those coins on which the native and Greek legends differ, or record different names.'

P. S. My readers will perceive that two coins in the foregoing plates are engraved with a ruling machine, and will judge therefrom that my long cherished expectation of having such an instrument from England has at length been realized.

Such is indeed the case—the medal ruler promised by BATE and Co. to be even superior to their own is come after two years' delay:—but instead of being their patent instrument, warranted to correct all distortion in the engraving of the object ruled, it is precisely the original defective instrument which has long been discarded as unfit for use.

It is hardly possible to believe that a respectable optician so high in his profession as Mr. BATE would wish to impose on the credulity of an Indian customer, albeit we 'Nabobs' are frequently looked upon as fair game for inferior articles and extravagant charges*:—yet there

* Of this I have myself had several examples. Some WOLLASTON'S Barometric Thermometers were sent out by a first-rate house to a Civilian, war-

are many strong points of internal evidence which would bear me out in asserting that the instrument now before me has been made a long time—has been patched up for experimental trials by its maker—has been thrown aside in favor of his new invention, and has been now been finally brushed up for exportation to India!

After bringing so serious a charge forward, it becomes my duty to support it with proof:—and this I can do from MR. BATE'S own written instructions, which bid me "where the coin is in high relief, to lessen the angle of axis B. *to diminish the effects of distortion*;" whereas in the following description of his patent, he prides himself on his son's having obviated all distortion*. He begins with a description of the original or American instrument illustrated by a diagram, which I have introduced as fig. 1. into the accompanying Plate XXIX.

"a, being the medal; b, the copper plate covered with an etching-ground; c, the tracer; and d, the etching-point at right angles to it.

"The arm c d having a ruling motion horizontally across the surfaces of a and b, and likewise moving freely in the direction c d. Also vertical motion being given to a and horizontal to b by the same screw: a series of lines traced over the medal were described upon the plate in the following manner: so long as the tracer moved over the plane surface or ground of the medal, the point d described equidistant straight lines upon the plate; but so soon as the tracer touched a part of the raised surface or relief of the medal, it was raised above its plane a quantity equal to the height of such relief, and the line described by the etching-point was no longer equidistant, but deviated an equal quantity upon the horizontal plate: in the succeeding line, the tracer being raised off still further by the increased height of the relief, the etching-point deviated still further from the former line described upon the plate: the continuation of this process produced a succession of deviating lines upon the plate, which opening as the tracer rose above the plane of the medal, and closing again as it approached that plane gave the effect of light and shade in the printed impression of the plate. But however pleasing the effect of these impressions, they were all *distorted* representations of the original, just so much as the lines producing the representation deviated from the straight line upon the medal—and I found that this distortion had suspended the use of the process which had been described 14 years before in the *Manuel de Tourneur*. The most valuable subjects, those having the highest relief, being most distorted."

Here let me pause—the defects above condemned, are possessed in the fullest degree by the ruler sent to me:—the tracer describes straight lines *only* across the medal, while the diamond engraving point traces curves deviating in proportion to the relief of each part:—so that if the relief of the central point of the medal be one-tenth of an inch raised, and the angle of axis b be fixed at $45^{\circ}+$, the same point will be wanted not to break!—the bulbs were so thick that when heated even to 300° Fahr., there was no chance of the mercury making its appearance in the tube! It was doubtless calculated by the makers that they would never even be tried, much less used!

* See Philosophical Magazine 1833, vol. 2, page 288.

† Without a drawing of the instrument it is almost impossible to explain what is meant by axis A and axis B. The first is the axis upon which the rod holding the tracing point turns in rising over the raised parts of the medal, and



misplaced one-tenth of an inch out of the centre of the picture. As an example I have engraved two ruled images of a medal of HOMER, belonging to Mr. LANG, C. S. with the deviation or distortion thrown in opposite directions. Few will believe that they represent the same object! In running down the relief (as in the cavity of the ear, and the front of the forehead,) it will be seen that the engraved lines return and cover a part of the plate already engraved! There is to be sure an attempt to *diminish* the fault by lessening the deviation of the engraved lines:—thus, the one-tenth altitude may be made to give a deviation of only one-twentieth or one-thirtieth in the engraving (by lessening the angle of axis B—but the light and shade will be thus equally diminished, and the whole effect destroyed.

The mode in which Mr. BATE junior got rid of this difficulty in his patent instrument is then described—and it was its ingenuity which alone led me to send for one of the instruments to rule my Bactrian coins, rather than attempt to make one for myself, which I shall now be compelled to do.

“My son, observing, that the thing to be desired was, a means of bringing the tracer down upon the medal, a quantity equal to the deviation of the etching-point from the straight line upon the plate; observing also that the process he was employing, transferred *vertical* sections of the medal to the plate,—proposed taking *inclined* sections of the medal. A little consideration determined the selection of 45° , as being equidistant from the vertical and horizontal positions employed and this inclination *completely fulfilled the purposes required, removing the distortion altogether*, and so far from impoverishing the effect of light and shade, improving that effect, inasmuch as without diminishing its quantity it threw the light upon the representation of the medal at an angle of 45° to its plane, instead of as before in the direction of the plane of the medal*. The arrangement finally adopted is represented in fig. 2.

“The tracer *c* being now attached to the right-angled triangle *efg* and a friction roller substituted for it at *A*, the triangle (the motion of which was strictly confined to the plane of the diagonal *eg*,) moved *d* a quantity always equal to the distance of the tracer *c* from the perpendicular *p*, so that the etching-point described precisely the same line upon the plate *b* as the tracer described upon the surface of the medal *a*.”

Nothing could be more simple, efficient and correct than this improvement, and though the merit of it has been contested by the French and by the Americans, I thought Mr. BATE justly entitled to his patent (of which by the way I have seen no specification yet in the Repertory) and willingly acceded to the terms he enjoined to my friends in England on consenting to make me one,—namely, that I should not make

B is a second axis fixed on A at any convenient angle, carrying the arm which holds the diamond point or graver.

* This is not so comprehensible—the effect of light and shade depends merely upon the amount and direction of the deviation: and the smaller the relief of a medal, the more horizontally the light is required to fall on it in order to exhibit parallel effects to those of more angular light on a high relief.

use of it in England. It is so far fortunate that I am now driven to my own resources, and compelled to invent and to make an instrument which, though quite on a different plan from that depicted in BATE's diagram, will I hope produce the same correct effects, with the additional advantage of being adjustable as to angle of the guiding plane *eg*, so as to regulate the force of light and shade ad libitum; while I shall moreover be at liberty to use it wherever I please.

I find that impressions in hard sealing wax answer perfectly for ruling, in cases where parties are afraid of trusting original gems or coins under the tracing point. But it should be remembered that the casts must be in relief like the coins, or their image will be reversed in the engraved representation.

VII.—*Note on a fossil Ruminant genus, allied to Giraffidæ in the Siwalik hills. By Captain P. T. CAUTLEY.*

When we look at the number of species of Proboscidean Pachydermata which swarmed in the primeval forests; when we see that in the present day nature appears to have left but solitary species to attest the gigantic form of primitive existence, the imagination naturally places before our eyes forms of corresponding magnitude in other genera; we picture to ourselves gigantic ruminants and gigantic carnivora only to be revealed by the remains which nature has placed in its own keeping to exhibit to inquiring man the wisdom of design and the systematic chain of organization established throughout the whole of the animal kingdom.

Amongst the Ruminants the discovery of the *Sivatherium giganteum* has most amply tended to prove the truth of this induction, exhibiting a ruminating animal bearing the same proportion to the rest of its genus, as the *Mastodon* and *Elephant* do to that of the *Pachydermata*. Amongst the Carnivora we have the *Ursus Sivalensis*, an animal far exceeding in dimensions its congener of the present period, or the *Ursus Spelæus* and bears of the German caves; with a species of hyæna at least one-third larger than that now existing. The reptiles also have their gigantic representative in an entirely new genus of the tortoise, for which we propose the generic name of *Megalochelys*, from the enormous proportions of its remains as yet discovered, and the size of its femoral and humeral extremities equalling those of the largest rhinoceros. The question however does not appear to be whether the animals of former periods were larger than those now existing, but

whether the genera of larger animals were not more numerous? We appear to be gradually losing all the larger forms of the creation. The Elephant and Giraffe of the present period will in all probability share the same fate as the Mastodon and Sivatherium of former eras, and be only recognised in the proofs exhibited by the researches of the geologists.

Having discovered the type of a gigantic Ruminant amongst the fossils of the *Siwaliks* in company with the remains of the larger Pachydermata, and having at the same time proved the existence of the Camel, with other numerous species of the Cervine and Caprine families of Ruminants, it was not by any means improbable that the present tribe of Giraffidæ should have its representative, so that the connection of the chain of existing and fossil ruminants might be still more perfect. The discovery of the Sivatherium and Camel in conjunction led to the probability of the existence of the Giraffe, giving this genus the first position amongst the family of Cervidæ. The fossil now to be described appears to throw some light on the subject, and should further research tend to corroborate the contents of this paper, it will be interesting to remark on the co-existence of the Sivatherium, Camel and Giraffe, with Quadrumana, Anoplotheria, Mastodons, and reptiles so closely resembling those of the present rivers, that it is not possible to discover in their osteological pictures at least, any remarkable deviation from the type which has been left to us.

The remain which I wish to describe is the third cervical vertebra: it was cleared out of a block of sandstone, and as is usual in similar cases, is very perfect in all its parts and proportions, and sufficiently armed with processes for the purpose of recognition and comparison. The dimensions are as follows.

| | |
|--------------------------------|-----------|
| Length in the barrel, | Inch. 7.8 |
| Breadth in centre ditto, | 1.7 |
| Depth ditto ditto, | 2.2 |

There are marked differences between this fossil and the corresponding vertebra of the existing camel, and in comparing them together the following appear to be the most worthy of notice.

In the fossil the oblique processes are much shorter, and stouter than those of the camel, with articulating surfaces at a greater angle: the barrel of the vertebra is much longer: the hollows or depressions which appear directly under the anterior oblique processes, and the ridges radiating from the extremity of the spinous process towards the expanded surface of the posterior oblique processes so well marked in the camel, are altogether wanting in the fossil: the upper surface

with the exception of the spinous process being altogether flat and unmarked.

On the inferior or lower side of the vertebra, there is also a considerable difference, that of the camel being much curved and hollow, uninterrupted by ridge excepting in the vicinity of the posterior extremity, where there is a knob or round process: in the fossil this knob is wanting, but in its place there exists a well defined sharp ridge from one extremity to the other. The transverse processes of the fossil are imperfect, but the form and angle of departure from the barrel of the vertebra differs from those of the camel.

The foramina for the transmission of the vertebral artery are well defined in the fossil, the space between the entrance and exit occupying the central third portion of the whole length; a prominent well defined ridge runs obliquely across the plane of the side connecting the upper anterior oblique process, with the lower and posterior extremity of the transverse process, a very marked peculiarity, which with the position of the foramina, separates the fossil from the camel.

It would be a great assistance to us were the Curator of the museum to draw up a monograph on the Giraffe, including measurements in detail of the skeleton, a specimen of which exists in the room of the Asiatic Society. The dimensions given in English and French measure would enable us, under the impossibility of obtaining the skeleton itself, of forming accurate conclusions as to the existence or not in the fossil state of the true Giraffe*.

Northern Doab, July 15th, 1838.

VIII.—*Sketch of the sculptured images, on the temple of Grâmeswara, near Râtrapur: extracted from Lieut. KITTOE'S Journal.*

Thursday the 8th December we marched at $\frac{1}{2}$ past 4 A. M. and reached our ground a little before eight o'clock, having travelled over 9 miles of road, though the actual distance from camp to camp at *Râtrapur* must be but 6 miles; the distance measured in tolerably direct lines (as in yesterday's march) was 8m. Of. 183y. The road winds a great deal, partly to avoid nullahs and uneven ground, and most of all, cultivated lands and villages; we passed under mango topes for nearly the whole way, some entire plantations, others the remnants of what had formerly been such: most of them are choked with underwood and rank vegeta-

* The Society's museum does not possess the skeleton of a Giraffe, or we should have readily complied with our correspondent's request. The remains of the animal which died some years since at Calcutta came, we believe, into Dr. PEARSON'S possession, but were not included among the collection presented to our museum by HAJI KERBALAI MUHAMMAD.—ED.

tion ; the "bent" or ratan plant is the most conspicuous ; the country in this respect resembles the terai of the Himálayas. It would appear from the numerous topes and mounds of earth strewed with pottery, hewn stones and bricks, which mounds rise above the surrounding low lands, that the country had been thickly inhabited in former years, as was likewise the terai in Upper India. When and why, all these valleys have been forsaken, is a matter which it would be difficult to attribute a cause to ; there are however less bricks and stones on the mounds or "Tanghees" (as they are here called) than on those of the Upper Provinces ; from this I should infer that the huts of former times were just the same as those now constructed ; namely, of a timber framework to support what is known in Europe by the name of "wattle and dab," which, from the swarms of white ants that (I may say) infest these regions, cannot be very durable : some however are more substantial, being built with mud and unhewn stones.

But to return to our route : for near a mile at the commencement of the march, the road winds through the narrow lanes of the villages mentioned yesterday, beyond the furthestmost of which and on the banks of the river running 100 yards from the road, stand the ruins of a small and once highly elegant temple dedicated to MAHA'DEO by name *Grámeswar* ; it is of white sandstone of a very fine grain ; what remains of the sculpture is truly elegant, the figures and idols are very graceful ; they are in the style of the temple of *Anrung Vásudeba* and others of the same era at the famous *Bhuvaneswar**. It is said to have been built by rája PARASURAM DEO who reigned from A. D. 1478 to 1503 A. D., and that it was destroyed by the apostate and spoiler, KALA PAHAR, who invaded *Orissa* from *Gaur* in A. D. 1609. This person waged a war of destruction against all the temples that came in his way ; the natives believe him to have been a "rakshas" or demon, that he possessed a magic kettle drum at the sound of which the noses and arms of all the idols dropped off, as well as the tops of the temples ; it was in vain I attempted to persuade the ignorant bráhmans of the different temples I visited, that KALA PAHAR was but a man like themselves.

The superstition and timidity of the people of these provinces exceeds any thing I have ever witnessed in any part of our presidency from *Ludiana* downwards.

* * * * *

A quarter of a mile above the village†, is an island separated from the rocks on the main land by a broad and exceedingly deep channel of the river flowing between. On this island (which is well wooded) are the remains of a very ancient temple dedicated to MAHA'DEO by the name of "*Pachameswar*," also "*Mánjī thákur*", or the Steersman Lord. The style of the temple is that of those in the Carnatic (if I mistake not), and like a few of the more ancient temples of *Bhuvaneswar* ; it has evidently never been completed, the stones are laid without mortar and are fixed with iron clamps, which have aided in no small degree to destroy the edifice. It is much to be regretted that the Indian architects of olden

* Vide Pl. XXXII.

† The Village of *Khandharpur*.

times had recourse to such an indurable method of fastening their masonry, many of the most elegant buildings at *Agra*, *Dehli* and elsewhere have been destroyed by this ill judged practice ; the iron after the lapse of a few years expands from corrosion and splits off large masses of the masonry.

The *Tāj* has suffered greatly from this cause, which was discovered even before the work was half finished ; copper and brass fastenings were then substituted, these have saved the dome from injury : brass clamps have however been used in other public works of antiquity in India, for several have been found in the masonry of the fort of *Cuttack* during its demolition for the use of the False Point lighthouse.

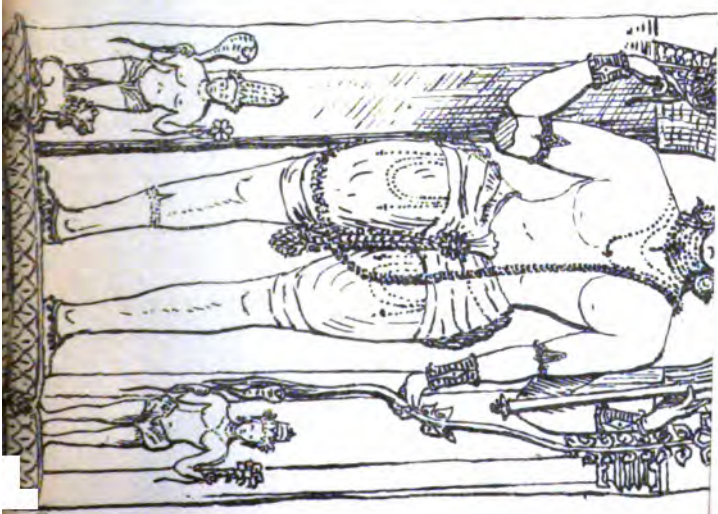
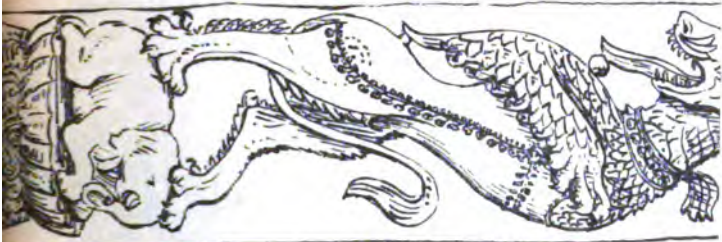
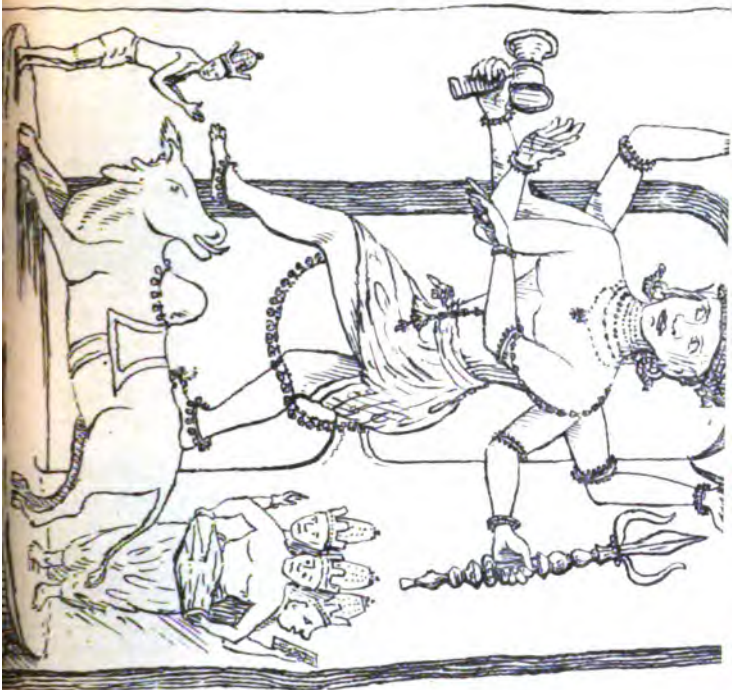
It appears that it was formerly the practice to build the temples with the material rough wrought, and to sculpture them afterwards : this temple is one of the many instances of such a custom.

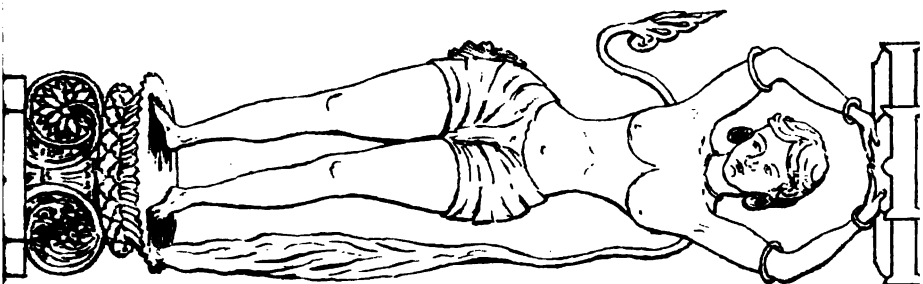
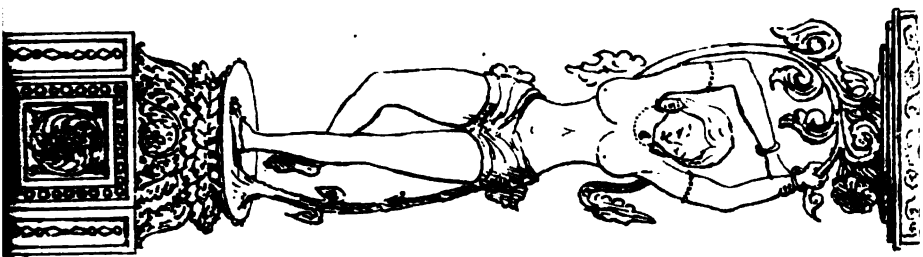
Towards the top of the conical tower are several words cut on the unfinished surfaces of two of the compartments ; the character is *Gaur Sanskrit* : the letters are clearly cut, and very large*.

The temple has evidently been consecrated in former years to *De'vi* or *DURGA*, Fig. 1, p. 2, xxxvii. There is a legend connected with this curious place which was told me by the attendant priest or *Sevaka*.

The story is as follows. Many years ago when the Hindu deities performed their miracles and deigned to appear unto a favored few, a rich merchant was coming from the western provinces in a large vessel (for in those days the *Mahanadi* flowed narrow and deep) laden with goods of great value. The vessel on approaching the rock was about to be dashed against it, but being drawn into a whirlpool was being equally threatened with destruction : the merchant who had an only offspring with him, invoked the goddess *Devi* that if she would save their lives and property he would offer up his child as a sacrifice to her bounty. The boat remained fixed and unhurt, when the merchant lamenting, fulfilled his vow by throwing the child into the river ; it sunk, but instantly *Devi* in the form of a mermaid rose from the water with the child unhurt (standing on the palms of her hands) which she restored to its father, demanding as an acknowledgment that he should build and endow a temple to *Siva* and present it with a golden bell. This he accordingly did ; however many years after a thief was tempted to swim to the sacred island and to steal the golden bell, which he was deprived of by the deity, who, as he was descending the rock, annihilated the sacrilegious mortal, and converted the bell into stone. I proceeded in a boat to see this spot where the credulous Ooriyas fancy they can discern the bell and clapper ; it is a hollow place in the rock, just above the watermark of the dry season, with a nodule of quartz (of which there is a great quantity imbedded in the coarse sandstone) projecting downwards from the upper surface of the cavity ; this they call the clapper ; the whole surface is besmeared with red lead and oil, and offerings are constantly made there, for which purpose it is necessary to go in a boat.

* The reading in Nagree is thus, श्री विंशति अरदेव, श्री विंशति भूषः vide Journal As. Soc. No. 60 of December 1826. "The divine Lord of beauteous variety." "The variegated ornament."







IX.—*Proceedings of the Asiatic Society.**Wednesday Evening, the 1st August, 1838.*

The Honorable Sir EDWARD RYAN, President, in the chair.

Mr. WILLIAM EDWARDS, C. S. and Major WILLIAM GREGORY, Bengal Army, proposed at the last meeting were elected members of the Society.

Sir GRAVES HAUGHTON wrote to thank the Society for the Sanskrit works presented to him.

"It was my good fortune, he writes, to be in London at the time the council appealed to the home authorities against the sweeping and extraordinary decision of the Bengal Government regarding the publication of native works by the Committee of Education; I made a point of collecting all the documents I could, and of laying them before our President. I have reason to think that my efforts were of some use in preparing the way for the success of the deputation which afterwards waited on the President of the Board of Control."

Read the following report of the special Committee appointed for considering the expediency of printing the *Sarira Vidya*.

Report.

The Committee appointed in your letter of the 20th instant, beg leave to state that they have duly investigated the several questions you have proposed and that they consider,

1st. That the translation of HOOPER'S Anatomist's Vade Mecum having been already made and paid for, that work should be adopted as the basis of the proposed volume for the use of the native medical pandits of India.

2nd. That several additions, alterations and explanations are indispensable to render the volume accurate or instructive.

3rd. That a few lithographic drawings on the scale of the wood cuts in PAXTON'S work would materially add to the value of the publication.

4th. The Committee have had the advantage of the advice and opinion of Dr. GOODEVE on the subject, and Dr. GOODEVE has kindly offered to examine the corrections proposed by MODHUSODUN GOOPTA and to give his general superintendence in the progress of the work. This liberal offer the committee consider should be at once thankfully accepted.

For the labor of correction and supervision the Committee think MODHUSODUN GOOPTA should receive a moderate remuneration, the amount of which the Committee scarcely think it their province to suggest.

Medical College, Calcutta,
31st July, 1838. }

W. B. O'SHAUGHNESSY,
Secretary to Committee.

The President thought that the report omitted to touch upon one point of considerable importance, viz. the estimated expense of the publication. The Committee seemed to concur in recommending the *Sarira Vidya*, because the translation had been paid for, and because Mr. MUIR'S bonus of 1000 rupees would cover the printing:—but he perceived from the Secretary's notice at the last meeting, that 2000 rupees more might still be required to complete it, including the plates and additions it was proposed to supply. Under these circumstances the aspect of the question was materially changed; and he would put it to the meeting whether it would be justifiable for the Society to expend so much upon a Sanskrit translation which but a very limited class could read, when the money might be so much better employed in imparting the same or other knowledge to the great body of the people in their own vernacular tongue. He therefore moved, seconded by Mr. HAME,

That a fresh reference be made to the special Committee begging their opinion, whether it be expedient for the Society to expend any portion of its funds on publishing a Sanskrit translation of the *Vade Mecum*, rather than to devote the amount to the imparting of instruction to the mass of the people in the Hindustani language, even though in so doing it forfeit the advantage of Mr. MUIR'S bonus, and of the translation already made.

The Secretary explained that the *Sarira Vidya* had become the Society's property by transfer from the Committee, on condition of its being printed. He had merely reserved it until the more important Sanskrit works should be completed. He could not have anticipated any objection on the score of inutility. It was intended to convey to the medical pandits throughout India, who are an exclusive caste of hereditary monopolists in their profession, and all study their art in Sanskrit, a more correct notion of human Anatomy. Originally the *Sarira Vidya* had been also destined to become a class-book in the medical branch of the Sanskrit College, but that class had since been abolished, and the teaching of the medical art limited exclusively to English.

What stronger argument of the utility of the book could be adduced than the tender of a bonus of 1000 rupees to effect its publication by a gentleman who had for two years in vain held out the same premium for an essay in English and the vernacular, on the advantages of science! Once placed in a Sanskrit dress, the European system of anatomy would be accessible all over India for subsequent transfer into the Hindî dialects of every province if requisite, and it was no trivial argument that the same work had been already printed in Arabic, and thus made available for the Musalmán practitioners and for translation into Urdú when called for. If doubt existed as to the propriety of publishing in the learned languages, he submitted that the special Committee of medical men consulted on a purely professional point, were hardly competent judges, and he moved, as an amendment,

That the question of the propriety of publication, be referred to the Committee of Papers in the ordinary course.

The President objected to the Committee of Papers because he thought they were more likely to have a leaning in favor of Sanskrit*.

On taking the votes on the question by shew of hands the amendment was lost and the original motion carried by a majority, the name of Bábú RAM COMUL SENA being added to the committee on the motion of Mr. HARE.

Read, the following reply from Government to the reference made in virtue of the resolution of last meeting on the subject of the Oriental publication grant.

No. 844, General Department.

TO JAMES PRINSEP, Esq.

SIR,

Secretary to the Asiatic Society.

I am directed by the Honorable the Deputy Governor of Bengal to acknowledge the receipt of your letter dated the 12th instant with its enclosure, and in reply to state that under the circumstances represented his honor the Deputy Governor is led to believe that he shall only conform to the wishes of the honorable the Court of Directors by giving to their orders on the subject of Oriental Publications so much retrospective effect as shall relieve the Society from the debt it has incurred in completing the publication of the works made over to it by Government. A Treasury order will accordingly be issued in favor of the Sub-Treasurer to enable him to pay to your receipt, on a bill to be drawn in the name of the Asiatic Society, the sum of 2,500 Company's rupees, which appears to be the amount advanced by the Society as stated in Para. 3 of your letter under reply.

2. The completion of the remaining volume of the *Mahábhárata* will fall within the natural appropriation of the monthly allowance prospectively assigned.

I remain, &c.

H. T. PRINSEP,

Secretary to the Government of Bengal.

Fort William, the 18th July, 1838.

The Secretary to Government in reply to the Alif Leila reference, wished to learn the cost of the translation, and the number of volumes, previous to determining on the amount of patronage to be bestowed.

Library.

The following books were presented :

The Bulletin de la Société de Géographie, 2nd series, vol. 8—by the *Geographical Society of Paris*.

Result of astronomical observations made at the H. E. I. C. observatory at Madras, by THOMAS GLANVILLE TAYLOR, Esq. H. C. Astronomer, vol. IV, 1836,—by the *Government*.

Defence of COLEBROOKE's exposition of the Vedānta philosophy—by Sir GRAVES C. HAUGHTON.

Recollections of the Deccan—by the *Author*.

* We must apologize for the imperfection of this report as we kept no note. Mr. E. STIRLING and others spoke on their experience of the Hindî Valdys up the country receiving their instruction in Sanskrit, whatever it might be in Bengal,—(where every one knows Sanskrit is more read and better understood than elsewhere, because it is more closely dependent on the Sanskrit for all abstract terms.)—ED.

The Quarterly Journal of the Calcutta Medical and Physical Society, No. VI.—by the Editors, Prof. GOODEVE and O'SHAUGHNESSY.

Rapport annuel sur les travaux de la Société d' Historie naturelle de l' Ile Maurice, 1837—by M. JULIEN DESJARDINS.

Meteorological observations for Dec. 1837 and 3 months of 1838, at Maurice—by the same.

Ditto at Calcutta, for June—by the Surveyor General.

Observations meteorologiques faites a Matfeppoliam, et a Kotigherry aux Neilgherries, en Mars, Avril, May et Juin 1838,—by M. ADOLPHE DELESSEET.

The following purchased at the suggestion of the Museum Committee.

JARDINE and G. VELBY's Illustrations of Ornithology, 1st fasc. N. S.

Lardner's Cyclopaedia—Russia vol. I. from W. ALLEN and Co.

A letter from Government forwarded for deposit in the Society's library, an account book and map belonging to the late travellers MOORCROFT and TREBECK, which were lately recovered with 50 other volumes from the chief of Kunduz, MEER MOORAD BEG by Dr. LORD.

The following information respecting the fate of these unfortunate travellers is extracted from Captain BURNES' report on the subject to the Governor General, dated 1st May, 1838.

Memorandum regarding books and papers of the late Mr. MOORCROFT, by Mr. LORD.

1. I have the honor to present you a list of books and papers belonging to the late Mr. MOORCROFT which I have been so fortunate as to recover during my recent journey to Toorkistan.

2. For the greater part of them I am indebted to MEER MAHOMED MOORAD BEG who, immediately on my arrival at Koondooz, wrote to the Khan of Moosar desiring that all such relics of the European traveller should forthwith be sent. In reply to this, 50 volumes all of printed works were immediately forwarded, the remainder including the maps, Mr. MOORCROFT's passports in English and Persian from the Marquis of Hastings, and a MS. volume with several loose MS. sheets, chiefly of accounts, I was enabled to recover when by the Meer's permission, I myself, made a visit to Khooloom and Moosar.

3. I think the evidence I have received proves, as strongly as the nature of negative evidence will admit, that no MS. papers of any value belonging to that ill-fated expedition remain to be recovered. I paid every person who brought books, and always explained that I would give double reward for any thing that was written, and though in consequence of this, several sheets of MS. were brought me, they never appeared on examination to contain any thing beyond accounts and such routine matters. Now as the natives must be unable to make the distinction, the chances evidently are that if any papers of importance existed, one or two of them at least would have found their way to me amongst the numbers presented.

4. I append a letter from MIRZA HUMER OOD DEEN, the principal Secretary to the Khan of Musar and a man who attended Mr. TREBECK in his last moments, saying that two printed and one MS. volume are in existence at Shahr Subs, and that he had sent a man to recover them for me. As I have since been obliged to leave the country, and all communication is by the present state of affairs at Cabool rendered impossible, I mention this fact as one worthy the attention of some future traveller.

5. The map is in itself a document of much interest as containing Mr. MOORCROFT's route traced, evidently with his own hand, and continued as far as Akcha within one stage of Audkhoe, where he is known to have fallen a victim, not more, I believe, to the baneful effects of the climate than to the web of treachery and intrigue by which he found himself surrounded and his return cut off. On the back of the map is a MS. sketch of the route through Adkhoe to Meinuma and back through Sireepoor to Bulkh, as though he had planned a tour through these little independent states, partly perhaps to see the horses for which they are famed, and partly to wile away the weariness of expectation till a safe conduct should be granted him through the territories of the ruler of Koondooz. We can thus almost trace the last object that engaged his mind and in the prosecution of which he laid down his life.

6. Connected with this I beg to subjoin a slip of paper which I found amongst a pile of loose accounts and which bears in Mr. TREBECK's writing, the following entry.

"Date September 6th 1825. Arrived at Bulkh August 25th, Mr. M. died August 27th," placing the date of Mr. MOORCROFT's death beyond a doubt, and also I think affording negative evidence against the supposition of its having been caused by any unfair means.

6. But the same paper is further interesting from an accidental coincidence. The MEEZZA I have before mentioned accompanied me from *Tash Koorghau* to *Muser*, and in the course of conversation, which naturally turned in a great measure on the melancholy fate of MOORCROFT's party, he said that about a month before the death of TREBECK he had one day gone to him, by desire of the Khan, to purchase some pearls which he heard he had. TREBECK produced the pearls but when questioned about the price said in a desponding tone, "Take them for what you please, my heart is broken, what care I for price now? The entry is this: "Total on the strings, 280 grs. Oct. 15th. Taken by MEEZZA, 131 grs. or 4 miskals. 16th. Taken by DEWAN BEGHEE 33 grs. or 1 miskal." It will be observed no price is affixed;—probably none was received. A stranger in a foreign land far from the soothing voice of countrymen or kinsfolk, surrounded by rude hordes who looked on him as the only obstacle to possessing themselves of the countless treasures which they believed to be in his charge, his youthful spirit pined and sunk. The bright visions with which he had commenced his career had long since vanished:—where he had looked for pleasures he had found toils, where for rest, he had to guard against dangers: sickness had carried off many of the companions with whom he had set out and when at last it struck his guide, his own familiar friend to whom he had looked for support under every adversity, and for rescue from every difficulty, and when in addition he found that all hopes of return to his native land seemed if not cut off at least indefinitely deferred, his heart as he too truly said was broken, and in a few short weeks he sunk into an untimely grave. I should apologize for a digression unauited I confess to the character of an official paper, but it is impossible to hear the warm terms in which poor TREBECK is still mentioned by the rude natives amongst whom he died without feeling the deepest sympathy in the fate of one who fell "so young and yet so full of promise."

7. It is only necessary I should add one or two more observations. The account book, which I now forward, is a valuable document in more respects than one. It contains an accurate list of the stock originally purchased by Mr. MOORCROFT when starting for his journey, and will serve to modify considerably the extravagant ideas that have been entertained of the quantities of goods which he carried. Taken in connexion with the loose MS. accounts it will serve also to evince that the greater part of this stock was sold off previous to his leaving *Bokhara*, and as far as my information goes I am inclined to believe the proceeds were chiefly expended in the purchase of horses, of which I understand he had when he died somewhat under a hundred, including specimens of all the best Uzbek and Turkooman breeds.

8. The account book is further interesting as containing in Mr. MOORCROFT's own handwriting a list of the articles which he offered on his presentation to the king of *Bokhara*, and a note at the end to the effect that the king had, in return ordered him a remission of the duties of his merchandize rather more than equalling the estimated value of the goods. It is further satisfactory to be able to add, on the authority of several *Bokhara* merchants who were on terms of intimacy with him during his stay in that city, that his character was highly appreciated by the king, who frequently sent for him to enjoy the pleasure of his conversation, and conferred on him the high privilege, never before granted to a Christian, of riding through the city and even to the gate of the king's palace on horseback.

9. In addition to the list of his merchandize this account book contains also a list of his private property, which it appears Mr. MOORCROFT was obliged by order of the *Koosh Beg* to make out on entering *Bokhara*: from this list we learn that he possessed 90 volumes of books. The number I have recovered and which I have now the honor to place at your disposal is 57; amongst them are several odd volumes of which the sets if complete, would give an addition of about 30—total 87, so that there are probably not more than two or three volumes of which we may not consider ourselves to have ascertained the fate. As to MSS. I have already shewn the high improbability that any of consequence have eluded my researches.

10. Scattered through the printed volumes numerous notes and corrections in Mr. MOORCROFT's own handwriting will be found. Of these some referring incidentally to the dangers of his journey, or laying down plans as to the route by which he meant to return, cannot be read without emotion.

11. In conclusion it is but justice to add that the impression every where left by this enterprising but ill-fated party has been in a high degree favorable to our national character.

Peshawar, 26th May 1838.

(Signed) P. B. LORD.

Translation of a letter from MIRZA HUMEE OOD DEEN to P. B. LORD, Esq.

"A. C. Two books and one manuscript are in the city of *Shahr Subz*. I have sent a person to bring them and when they reach me I shall send them to you. In all things I will never forget your good offices. Let me always hear of your welfare. Believe what the man says and that I am your well-wisher. Dated Mohurram 1254 A. H."

[The list of books, principally medical, it is unnecessary to insert.—Ed.]

Literary and Antiquities.

The revised copy of the *Girnar* inscription made with the utmost care by hand, was received from Lieut. POSTANS, who had since been deputed to *Baroda* on duty.

This copy satisfactorily clears up almost all the passages at all dubious in Captain LANG's original,—it will be necessary to publish a revised translation in consequence.

Captain BURNES forwarded copy of, 1st a short Buddhist *Pāli* inscription, from the country of *Shah Kuttur*, or *Chitral* south of *Badakshan*, on the river *Kooner* (the *Kaure* of *Elphinstone*, a principal feeder of the *Indus*); 2, facsimiles and ectypes of a Bactrian inscription from *Kapurdigheri*, the same of which a sketch was formerly taken by M. COURT; and 3, a small inscription, in a modification of the same character, under the other.

[We shall publish these immediately, but we fear without interpretation.]

Mr. H. T. PRINSEP, Secretary to Government, forwarded copy of a vocabulary of the language of the Moghel Aimeks, by Lieut. LEECH, for such notice as the Society might deem it to merit.

This is the eighth language or dialect of which Lieut. LEECH has made himself master in the course of his present journey.

Captain BURNES also forwarded for inspection 5 gold coins dug out of the *tope* of *Khaiber*.

They were found a few feet below the surface by a party of Afghāns who were digging a trench on the mound to protect themselves from the attack of another party. One coin was of *Mokadphises*; the others were varieties of the *Kanerkas* group.

With reference to the legend of the *Mokadphises* coin, the Secretary announced that he had been fortunate enough to discover a scheme of the Bactrian alphabet, which enabled him to read the whole of the Bactrian legends with much greater facility, and semblance of truth than he had before been able to obtain. The language he now perceived to be *Pāli*, although somewhat disguised by being written in an alphabetical system as foreign to its structure as the Persian would be to the modern Bengālī.

[The paper is published in the present number.]

Mr. MADDOCK proposed that the Society should take steps to procure some fragments of the richly carved sculpture of the *Kanarak* temple, now thrown on the ground and in danger of destruction.

It seems that permission having been given by Mr. WILKINSON to the *Kurda* rāja to supply himself with stones (meaning probably the loose detached stones) from the black pagoda, the rāja had commenced deliberately dismantling the temple and carrying off all the images to ornament his own house!—In moving one large figure he had been obliged to take down the beautifully carved door depicted by STIRLING, and unless stopped there would soon cease to exist this venerable monument so long the principal landmark on the coast.

Resolved, to address Government to suspend if possible the further demolition of the *Kandrak* temple, or otherwise at least to secure some of its sculpture for preservation in the museum.

Mr. J. P. GRANT, presented for the museum in the name of Mr. CHURCH of *Penang*, two bows and a bundle of arrows from that island.

Col. STACY presented on the part of Major YULE an ornamental Lithograph of a gold medal of SHAH JEHAN, weighing 70 oz, dated 1064 Hej.

Statistical.

Dr. SPRY laid on the table various tabular statements which had been prepared under his predecessor and himself,—but, at the request of the President, he withdrew them in order to embody them in a formal report by next Meeting.

PHYSICAL DEPARTMENT.

The following extract of a letter from Lieutenant HUTTON, on his return from deputation to the *Spiti* valley, was read.

Soongnum, 6th July, 1838.

I am now again at *Soongnum* in *Kunawur*, having recrossed the *Hungrung* Pass yesterday, on my return from *Speetee*, and bid adieu to the Tartars. The *Passes* to *Ladak* from *Speetee* were quite impassable from the great depth of snow which had fallen full two months later this year than usual, throughout the hills. Every

thing is very backward in consequence,—and in the higher parts of the *Speetes* valley, there is great distress from the loss of last year's crops, which were beaten down and buried beneath an early fall of snow. I experienced the greatest difficulty in reaching the fossil ground owing to the want of supplies and the unwillingness of the *Kiladar* at *Dunkur* to allow me to proceed. On my arrival beneath the fort, he sent me orders to return, as he had received instructions from *Ludak* to oppose my advance. In this emergency, finding myself within a few miles of the desired object, and unwilling that the wishes of the Society should be frustrated, particularly after the fatigues and discomforts I had experienced on my way; I bethought me that it is sometimes expedient when "at Rome, to do as the Romans do;" consequently finding that I had about as many men, and better arms than my opponent, I sent him back threat for threat, and told him that it was my intention to proceed by force if necessary, and that if he offered to oppose me, I would burn his castle about his ears. The threat had the desired effect, and I received answer that his highness would pay me a visit, which he did, and having thus dismounted him from his high horse, I made him furnish me with six days' provisions for my people, by which means alone I have been able to visit the fossil ground and determine the geological formation of those dreary and melancholy looking regions. The fossils themselves as specimens are certainly not worth one quarter of the trouble they have occasioned me, and partake of the same decomposing nature as the shales in which they occur. Such as they are, however, I have collected them, and they will be interesting when taken in connection with the geological specimens of the whole country travelled over. In natural History this is the most barren country I have ever seen; of birds there are scarcely any, and of beasts none but the wild sheep. If the season be not against me, however, I may yet procure good specimens in the lower hills. Here there is no covert for living creatures, but lower down in *Kumaur* where the forests are thick, I shall be able to make up a collection. The geology is however, I think very interesting and may perhaps cover the imperfections of other branches of my work. I have the "*Bhair* or gigantic partridge;" the common chough, and another of the genus, which I am inclined to think is new; pigeons and college pheasants also. The tragopan and monal are not found up here, but occur from *Wangtoo* downwards. Of the wild sheep I have been able to procure only one specimen, which the heat has spoiled in spite of lbs. of arsenical soap; the thermometer at 110° was almost enough to have spoiled me too. At *Naks* in *Hungrung* at sunrise on the 3rd July 37°,—at *Lees* at noon, 110° in sun, 100° in my tent; and sunset 70°.—I am worn to the bones with fatigue, and anxiety lest the Society should feel disappointed with the results of my journey, but I feel conscious of having done my utmost and must therefore wait patiently the decision of my judges. I shall halt here for a day or two to rest, as there are some things worth seeing in the neighbourhood, such as copper mines, &c. Poor *GERARD*'s account of "excellent limestone in this neighbourhood," was premature; he failed in his attempts to burn it, so say the people, and so says the stone, for it is a secondary limestone containing clay and sand and burns to a *slag* in consequence.

Three more specimens of Indus jet coal were received, through Government, from Captain *BURNES*.

Mr. H. B. *HODGSON*, addressed to the Society's care through the Honorable Col. *MORISON*, a further roll of drawings illustrative of the zoology of *Nipal*.

The Secretary noticed an omission on his part in the steps taken to promote the success of Mr. *HODGSON*'s undertaking by the Society, that it had not yet solicited the usual patronage of the Government to his elaborate and costly publication. Having recommended the Royal Asiatic Society to solicit the patronage of the Court at home, he had deemed it superfluous to do so here, but as nothing had apparently been done there he thought it was now incumbent on the Society to do it at once.

Resolved, that the present roll of zoological drawings be submitted to the Hon. the President in Council with a solicitation for such degree of public patronage, as the national character of the publication may seem to entitle it from the Government of British India.

Lieutenant E. *CONOLLY*, 6th Cavalry, communicated the following particulars of the recent fall of an aerolite in Central India.

Three aerolites fell during a heavy storm and after a vivid flash of lightning, on the same day, i. e. about the 23rd June.—One at *Burnaggur* (also called *Nolat*) the other two near *Oujein*. The three are said to weigh two maunds (together) and to be of three colors, green, yellowish red, and French grey, but on such points native authority is questionable. There seems no cause to doubt their having really

fallen, the fact having been officially reported to the Resident of Indore by the *Oujein akhbâr navis*. I also heard of it from private letters.

Mr. BAX has ordered them to be sent to him, and has promised to forward them on to me when he shall have satisfied his curiosity by the sight of them.

Should they not be required by superstition for gods, which is more than probable, specimens shall be sent to the Asiatic Society and to yourself.

A note on the geology of the desert and the navigability of the *Loni* river was communicated by Captain BURNES, in consequence of a remark in the Report of the Coal Committee, on the want of such information.

Natural History.

The following presentations to the museum, were noticed by the Curator.

Skeleton of the Bengal Bustard, *Otis Bengalensis*.

Skeleton of the Negro Money, *Semnopithecus Maurus*.

This monkey preserved in spirits, was on a former occasion presented by Dr. PRAMSON, but falling into a state of decay, it was thought advisable to prepare and articulate the bones for a skeleton rather than allow the specimen to be lost to the Society's museum.

Crania of the Red, or Asiatic Orang Otang. (*Pithecus Satyrus*, GEORR.) one from *Borneo*, the other from *Sumatra*.*

These valuable relics of what appear to have been most extraordinary gigantic monkeys were presented by Major GREGORY. They are those of adult males each exceeding in size even that of the *large* one killed on the N. W. coast of *Sumatra*, figured and so admirably described by Dr. AXEL in the Society's Transactions and which is stated to have measured 8 feet when suspended for the purpose of being skinned, parts of the spoils of which are now deposited in the museum. As no very marked differences are perceptible in the general conformation of the skulls of these two animals, and they exactly correspond with each other in their dental systems, it is evident that the individuals to which they belonged must have been of the same species. The one from *Sumatra* is the larger of the two and must have been a most formidable and stupendous animal in the living state. The skulls may be considered a valuable enrichment to the Society's collection, for they probably surpass any thing of the kind yet seen.

Inflated and dried stomach and cæcum of the *Semnopithecus Entellus*, or Hanuman monkey.

This is intended to show the sacculated and complex form of the first named viscus, in this group of monkeys, which in this particular respect differs most essentially from the Orangs and most of the other *Simiæ* where the organ is of the usual simple construction, as may be seen by comparing it with the stomach of the *Pithecus Satyrus* placed with it in the museum.

Distended and dried stomach of a wild cat, *Felis Catus*.

Exemplifying the simple form of the organ in this genus of *Carnivora*.

Specimens of the head, wings and legs of the Flamingo (*Phænicopterus ruber*), Cranium and imperfect skin of the Crested Porcupine (*Histris cristatus*), and a dried skin of a large Armadillo, *Dasyurus* — ? presented by Mr. KIRTON on behalf of Mr. COLQUHOUN.

A Centipede, (*Scolopendra morsitans*), of large size, captured at the mint and presented by the Secretary.

Skull and skin of a Civet Cat, *Viverra Zibeta*, or Indian variety of that animal, presented by Colonel STACY.

A fine and perfect specimen of the *Silhet* mole (a variety of the *Tulpa Europæa*), preserved in spirits, presented by Mr. J. TAYLOR.

The existence in India of this little obscure animal having been doubted by some and denied by others, it affords pleasure in being able to set the matter beyond the power of contradiction by the exhibit of a fine specimen, and the mutilated skin of one of former receipt, one from *Silhet*, the other from *Assam* and which may lead to the belief of their habitat in our more immediate possessions.

From the circumstance of its so completely resembling the European mole in almost every particular it may reasonably be considered a variety of that animal.

G. E.

* The latter is reserved by Major GREGORY, as the Society possesses one jaw of the same species.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of July, 1888.

Forenoon, 10 A. M.

Afternoon 4 P. M.

| Day of the Month. | Atmospheric Pressure. | | Temperature. | | Hygrometry. | | Aqueous tension. | | Weather. | | Wind. | | Rain on ground. | | Weather. | |
|-------------------|-----------------------|-------------|--------------|-------------|-------------|-----------|------------------|--------|------------------|----------|-----------|---------|---------------------|----------|-----------|---------|
| | Old Stand. | At 32° Fah. | River wh. | Well water. | Of air. | Wet-bulb. | Dew-point. | Therm. | Hair Hygrometer. | By bulb. | By point. | By Dew. | By Hair Hygrometer. | By bulb. | By point. | By Dew. |
| 1 | 29.583 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 2 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 3 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 4 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 5 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 6 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 7 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 8 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 9 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 10 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 11 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 12 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 13 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 14 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 15 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 16 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 17 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 18 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 19 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 20 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 21 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 22 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 23 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 24 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 25 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 26 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 27 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 28 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 29 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 30 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| 31 | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |
| Mean. | 29.585 | 29.447 | 85.5 | 83.9 | 86.5 | 78.5 | 4.5 | 4.5 | 83 | 78 | 85 | 84 | 84 | 70 | 70 | 86 |

The measure used for the upper rain-gauge did not belong to the instrument and requires a correction of two per cent. subtractive, which will make the real quantity of rain on the roof inches 9.47 or .10 less in excess of that measured on the ground, but still there is an anomaly to be explained.—J. P.

JOURNAL

OF

THE ASIATIC SOCIETY.

No. 80.—August, 1838.

I.—*A short account of the Moa Morah sect, and of the country at present occupied by the Bor Senaputtes. By S. O. HANNAY, Capt. 40th Regt. N. I. Asst. to the Commissioner in Assam.*

Origin and Religious tenets.—*Moa Mureeah* or *Merah*, is the designation of a particular sect of the Assamese population, who are noted in the latter days of *Assam* history. They are scattered over the whole valley, being found as far west as *Goalpara*, but the greatest numbers seem to be located in that tract of country, known in the present day, as the *Muttuck* territory.

About the period that the numerous tribes in the valley of *Assam* were converted to Hinduism, a division took place amongst them, numbers of the population following the religious tenets of a certain "Gooroo," or spiritual adviser, who did not admit the supremacy of the Brahmins, and professing to worship only the incarnation of the deity, known to heathens, as "VISHNU."

The residence of the first priest of this sect, is said to have been on the *Majoillee**, on the banks of a small lake, which is now carried away by the *Burhumpooter*. The name of this lake, from the circumstance of its abounding in a description of small fish, called *Móá*, was named in the usual style of Assamese phraseology "*Móá Morah*;" from whence arose the name of the sect, but which has been turned, by those of the Brahminical faith through a spirit of contempt, to *Moa Múreesah*.

After the rise of the sect of *Moa Mureeah* the seat of the head priest, called the *Moa Mureeah Gossain*, was removed to a place called *Kuteeah Putha*, a short distance to the west of *Jorehát*, and the spot on which he resided was elevated from the plain, several hundred feet, by

* Large island of the *Burhumpooter*.

artificial means. The name of the first gossain was ONEE ROOD, and disciples seem to have flocked in to him from all the different tribes, such as, Cassarees, Ahoms, Dhooms, Kuleetas, Kaysta, Harees, and others of the lowest classes. And from the upper part of the valley, may be added Sooteahs, Morans, &c. &c. &c.

Nothing particular is recorded of this sect, until the reign of rája LUCKMEE SING, when having joined in the rebellion of this rája's brother, a general massacre was ordered, which was carried into effect, and the gossain, with all his family killed. It is related of LUCKMEE SING that his feelings were so vindictive against the gossain, that although he was positively informed not only of his death but that his body had been cut in pieces, still he had the river dragged, for the remains of his enemy, in order to satisfy himself that he had really been killed.

This general massacre fell very severely on the Morans, and other inhabitants of the *Upper Booree Dihing*, who formed a large portion of the army, which for a time overthrew the rule of LUCKMEE SING; and to this indiscriminate massacre may be attributed the subsequent civil wars of *Assam*, which in the end have brought it to its present degenerate and comparatively impoverished state.

LUCKMEE SING seems however to have relented shortly after the massacre above mentioned, and, on a representation being made to him, by the priests of the opposite sect, he appointed another Gooroo, or spiritual head, over the Moa Mureeahs, in the person of a man, named PITUMBER, who was said to have been a nephew of the former gossain. As might have been expected this priest and his party retained all the vindictive feeling of their relatives towards the sovereigns of *Assam*, and a second rebellion broke out, in the following weak reign of GOUREENATH SING, who fled from his seat of Government for seven years, during which time the Moa Mureeahs set up several rájas of their own. Their names were as follows, DUFFLA BOHOTEEA*, BOORA PHOKAN, his son UGNEE KUMWAR, and lastly BAROTEEA, who got rid of his predecessor by a trick of rather a ludicrous nature. Having had much influence over UGNEE, he persuaded him that the north bank of the *Burhum-pooter* was the proper place for his ráj, and when he had seen him and his party safely off, he returned, and quietly set himself up in his stead at *Rungpore*. During this confusion the setting up of rájas seems to have been quite common in *Upper Assam*, as even the Dhooms of the Moa Mureeah sect set up a rája for themselves, first at *Sudiya*, and afterwards at *Douka khana*, on the north bank of the *Burhum-pooter*. This ráj was overthrown by the Khamtis.

* A Duffla slave,

The Moran portion of the Moa Mureeahs set up for themselves, on the *Debroo*, the father of the present Senaputtee, who took possession of the present *Bengmorah*, the former name of which was *Sungmae pathar*.

During the time that BAROTEEA had established himself at *Rungpore*, GOURKENATH SING, received the assistance of the British Government, and the Moa Mureeahs were dispersed. The chief of *Bengmorah* was overthrown by the inhabitants of *Sudiya*, assisted by the Khamtis, and the six Singpho Gams, residing on the east bank of the *Noa Dihing*, and a persecution seems to have been kept up against the sect, who were driven to seek shelter amongst the Singphos, and a great number of the Moran portion of the sect were cut off by these people at a spot near the confluence of the *Noa* and *Booree Dihing*.

Under the firm government of POOR-NA-NUND, Bor Gohain, or chief minister of the rāja, the Moa Mureeahs received severe chastisement, and those who escaped towards the *Upper Dihing*, do not seem to have been able to establish themselves again, as independent of their rightful sovereign; either during the remainder of rāja GOURKENATH's reign or in that of his still weaker successors COMALESWUR, and CHUNDERCANTH, but they made several efforts to do so, and BAROTEEA, (who was formerly mentioned,) whilst living for shelter in the Beesa Gam's village, (the grandfather of the present Beesa,) sent a person called RAMNATH BOR BOOROOAH to treat with the Burman monarch for assistance; though, at that time, without effect. Messages were however repeatedly sent to *Burmah*, and parties of Burmese were twice brought into *Assam*; once by the Beesa Gam, and once by a Khamti chief called HOCASS GOHAIN, and it was with him, that the father of the person known as the Kaminee Phokan, first came from *Burmah*. These Burmans however, were always bribed, or bought over, through the influence and wealth of the prime minister, who in the end relaxed his severity towards the Moa Mureeahs, and subsequently gave the present chief of *Muttuck*, his title of *Bor Senaputtee*; who appears to have remained obedient to his lawful sovereign, paying the revenue required from the portion of the sect, over whom he was supposed to have authority.

POOR-NA-NUND GOHAIN may be said to have been the protector, and regenerator of his country for a period of twenty years, before which time it had been a scene of anarchy and bloodshed. He was not destined however to remain longer in his prominent situation, for his sovereign the weak CHUNDERCANTH, and a few of his nobles, jealous of the Bor Gohain's power and influence, but unable to displace him themselves, secretly entered into a league with the Burmans for that purpose,

and the Bor Phokan, who went to *Burmah*, via *Calcutta*, on the part of CHUNDERCANTH returned to *Assam* with the Khyee Woongye, and 8 or 10 thousand Burmans, and the latter being always ready for conquest, were by no means loath to make their way into a country, which had been represented to them, as overflowing with riches ; but the Bor Gohain only lived to hear of their arrival across the frontier.

What followed in this country is already well known, and there are few, who are not aware, that the oppressive rule of the Burmans brought *Assam* into a more degraded state than it had ever been.

The Senaputtee taking advantage of the confusion of those times, established himself, in his father's position at *Bengmorah*, and secured himself from the immediate control of the Burman government by keeping at his residence, and in his pay, a vakeel, who was a native Burman* and remained with the Senaputtee, on the part of the Burmans.

The Bor Senaputtee having established himself as the head of the Moa Mureeahs on the line of the *Debroo*, he soon set himself up, on a firmer footing, than any of the former chiefs of the sect, and as he pleaded poverty, besides, the outskirts of his country, being so jungly as to present a forbidding aspect to the Burmans, they allowed him to remain comparatively unmolested.

At the time of the arrival of the first Burmese army in *Assam*, the Morans occupied, as they now do, their proper localities on the upper portion of the *Debroo* ; and lower down that river, and scattered over different parts of the surrounding country, there was a tolerable population of Moa Mureeah's and other Assamese, but not near so extensive, as was found, on the British taking possession of this country.

Upper Assam had been long subject to the inroads of the Singphos ; and their slave-taking excursions were carried on with renewed success, during the Burman rule in *Assam*. The Bor Senaputtee seems however to have prevented any successful attack on his portion of the country. And it is reported that the present Beesa Gam, made, at one time, an attempt on a large scale, to carry off some of the people, but was driven back with great loss. The inhabitants of the surrounding country therefore, feeling that they would be more secure from Singphos, and Burman oppression, naturally chose to put themselves under the protection of a man like the Senaputtee. And thus on the arrival of the British in *Assam*, he was found with all the semblance of an independent prince, and the head of a country containing upwards of 50,000 inhabitants.

* The Kaminee Phokan before mentioned.

It does not appear that any particular boundary was laid down formerly to the Senaputtee, or that any particular parts of the province were considered as his hereditary lands. But subsequent arrangements with British authorities in *Assam*, have given to him a territory, having the *Burhumpooter* as its western and northern boundary, the *Booree Dihing* as its southern, and a line drawn south from *Sudiya* to the *Booree Dihing* is the eastern boundary. And the Bor Senaputtee is the acknowledged chief of a tract of country, bearing a fair proportion in extent, to that which has been made over to PORUNDER SING.

The Morans are quite a distinct class of the Moa Mureeah sect, and occupy the same section of the country, as they did in former days. This tract is situated between the *Dangooree*, and *Debroo* rivers; they also inhabit a portion of the south bank of the *Debroo*, but they do not appear to have extended to the westward of the junction of the *Dangooree* and *Debroo*, at which place a chokey was situated, called *panes chokey*. The following are the names of some of their localities: *Bor Chookree*, *Húrá Chookree*, *Casso-Jan*, *Hoolúnga-gooree*, *Goss-Jhán*, *Dhea-máti*, *Bhóthó-Jhán*, *Jégooniguyá*, *Majoilee goyah*, *Beesa Khópa*, and others. In the days of the *Assam* rajas, the Morans paid no revenue, but as people living in a jungle, (which it would seem their name denotes,) they were called upon to supply the rāja's household with different articles in accordance to the designation of their tribes; for instance, the Hathi Soongis supplied him with elephants, the Rom Jogooyahs, with the coloring vegetable matter known in *Assam*, as *rom*, Dharee boohas, with mats, and the Mo-Jogoozahs with honey, and so forth.

Further down the *Debroo*, there are many villages inhabited by the Moa Mureeah sect, but they are generally found with a greater proportion of those who profess the Brahminical faith; but in the western portion of the country, many of the first classes of the Ahom population reside, who are followers of the Moa Mureeah gohains.

The jungles on the north bank of the *Booree Dihing* have been, for several years, considered as a place of refuge for the disaffected, and such has been the emigration (from well known causes), to the country between the *Burhumpooter* and the *Booree Dihing*, that it is said, there cannot be less than a hundred and twenty thousand inhabitants there. This statement will be more readily credited, when it is known that the whole of the extensive khats, or farms, containing the finest grain pathars in *Upper Assam*, and situated between the *Debroo*, and the *Booree Dihing*, are occupied within these few years by the runaway ryots of PORUNDER SING. The whole of the Beheeah population of the

districts of Seesee, and Dumajee, three fourths of the Cassaree population, originally belonging to *Sudiya*, and three fourths of the Dho-ania population released from Singpho slavery, amounting to 8, or 9000, are all located within the boundary lately assigned to the Senaputtee.

The Bor Senaputtee pays to the British Government an annual sum of 1800 rupees, and the surplus of the revenue of this country remains in his own hands. What the amount of that revenue may be, is, I presume, not known. My information, which I have obtained from various sources is as follows. All new comers into the *Muttuck* country, are taxed after one and a half years' residence there. A poll tax is acknowledged to be in force, and the different classes pay according to the following scale.

| | |
|---------------------------------|---------------------|
| Morans, | 3 rupees per head. |
| Cassarees, (Sonewahls,) | 3 rupees ditto. |
| Behees, (Sonewahls,) | 2½ rupees ditto. |
| Assamese, (of all classes,) ... | 2 to 1 rupee ditto. |

But with such a mixed population, a portion of which are no doubt, people of idle and dissolute habits, the probability is that many of the inhabitants escape taxation. And besides it can hardly be expected, that any regular system of administration could be carried on, when the head of the country, and his whole family, are so illiterate and ignorant. The Senaputtee has seven sons, and he, himself, is the only one of the family, who knows any thing even of the common Assamese character. Increasing prosperity however, has rendered it necessary for them to employ native writers, who are placed in the different districts over which different members of the Senaputtee's family have control. He, and his sons, have also taken large farms into their own hands; which are worked by the Assamese, who have last gone into *Muttuck*, so that although they escape taxation, they are thus made a source of immediate profit to the chief, and his sons.

In a letter, published in the Government Gazette, dated June, 1825, the Bor Senaputtee is said to be the head of the Moa Mureeah tribe. I however wish to explain, that the Moa Mureeahs are not a distinct tribe, but a religious sect of the Assamese population, composed of individuals, from most of the known tribes of *Assam*, and who have risen into notice within the memory of men now living. The Bor Senaputtee has been generally considered as the head of a distinct tribe, tributary to the *Assam* rajas; but this is not the case. He is neither the chief of the Moa Mureeah sect, nor of the Moran tribe, as these classes are by no means confined to his territory.

The head priest of the Moa Mureeahs, is a son of the man formerly mentioned, called "PITUMBER;" until lately he resided at *Kooteah Pottah*, but he is now living in the Senaputtee's country: his name is BUCKTANUND. His antipathy to those who profess the Brahminical faith is well known, and the strong suspicions that exist, regarding his late conduct at *Jorshát*, having been a cloak for mischievous purposes, has forced him to leave that part of the country.

The Moa Mureeahs seem to have a good deal of republican feeling, with regard to equality, and free will; and it is said that there are great dissensions amongst those in the Senaputtee's country.

BUCKTANUND dislikes the chief, because he will not enter into his bigoted views, on secular, as well as religious matters. The Morans also, on the *Upper Debroo*, have set up for themselves a separate Goo-roo, or spiritual head, and as they considered themselves on an equality with the Senaputtee, they are not at all satisfied with the high station he has lately assumed, and particularly with their having been money taxed, and also with regard to other unusual exactions made on them by him. I have understood that these disaffections have been carried so far, as to be made the subject of a formal complaint to the British authorities in the beginning of 1837.

The Bor Senaputtee is a "Boorook Sooteah;" his ancestors* were natives of the district of *Sudiya*, but he was born on the *Upper Debroo*. He must have been a man of some energy of character, and is spoken of as having been much liked in his younger days; but love of money, and of power, have lately assumed such an influence over him, as to be seen in all his actions. He is also said to be completely ruled by his wife in these matters, against whom the Morans entertain very bitter feelings.

The Senaputtee is now an old man, and having had one severe paralytic stroke, he may not live long; none of his sons are equal to him in intellect, but the second son, called the "MADJO GOHAIN," is said to be the most intelligent, and he is strongly in the interests of BUCKTANUND the priest. Taking into consideration therefore the character of this priest, it is to be feared, that, when released from the control of the Senaputtee, some disturbances may arise, and urged by bigotry, some acts of violence may take place, unless prevented by timely interference on the part of the British Government.

Although the Senaputtee's country is interspersed with jungle, it abounds in extensive grain pathers, and is a rich depôt of grain. A great portion of the inhabitants being of those classes who are consider-

* Father and grandfather.

ed the best farmers in *Assam*, the cultivation is good, and crops of the same description are raised as in the other parts of *Assam* ; with exception of the mustard plant, which is scarce. Sugar-cane, of a superior quality is cultivated to some extent, and manufactured into goor. And in the upper section of the country, inhabited by Morans, cotton of an excellent quality is produced, and forms a considerable export to lower *Assam*.

Rice and cotton are the staple commodities, and with goor, and elephants' teeth, form the only exports.

The country, however, like the other sections of *Upper Assam* furnishes mooga ; and the southeast portion is the locality of numerous tea tracts, many of which are in an advanced state, and produce tea of an excellent quality.

The universal resources of the Senaputtee's country must be supposed to be of the same nature as those which are known to exist in that portion of *Upper Assam*, with which it is connected. It may however be observed, that on the eastern side of the country towards the *Naga* hills, there are iron, salt, and coal found, within the limits of the boundary lately allotted to the *Muttuck* chief ; neither of these minerals are worked.

The imports into the Senaputtee's country, which find a ready sale are salt, tobacco, betel-nut, cossyah mattocks, flints and steel, knives of Assamese manufacture, brass pots, copper pots, earthen pots.

High ridges of ground run across the country from southwest, to northeast, particularly towards the eastern boundary. But the general level of the country is low, and the lower portion of the *Debroo*, and the whole line of the *Boores Dihing*, with a few exceptions*, is flooded, during the height of the rains. It is intersected by numerous streams, and water-courses, and those on the north bank of the *Debroo*, which fall into that river, coming from the *Burhumpooter* ; a portion of the country therefore, from *Sudiya* to the mouth of the *Debroo*, may be considered only as a succession of islands, belonging to the large river.

The principal streams on the northern side, are the *Sasa* and *Tingri*, both of which fall into the *Boores Dihing*. They are navigable for the common canoes of the country throughout the greatest part of the year, and are consequently extremely useful to the inhabitants, as outlets for the produce of the country.

The *Muttuck*† country is not considered unhealthy by the natives,

* In many places the remains of a water bund are visible on the *Dihing*.

† A name given to the Morans by the Khamtis.

but there seems to be a want of good water, and this may be attributed to the circumstance of most of the running streams having their source in jheels, passing over low alluvial soil, and through thick jungle. The inhabitants, however, who live at a distance from the main streams, use the water from wells, which is considered good.

I know little else worthy of remark regarding the country of *Mut-tuck* or its inhabitants, and the latter no doubt resemble those of the same classes in other parts of *Assam*. The *Morans*, however, have some peculiarities which are not met with in other *Assamese*. They are rude and rough in their manners, and much more robust in their persons than most *Assamese*; and they are not as yet, addicted to the use of opium. Their only peculiarities in dress are that they wear black turbans, and very long amber ear-rings.

In these people, we might perhaps trace a remnant of what the inhabitants of *Upper Assam* were a century ago.

II.—Mr. KITTOE's Journal of his Tour in the Province of Orissa.

Having been deputed by the Coal and Mineral Committee to explore the supposed coal fields of *Orissa*, reported by me in 1837, I left *Calcutta* by dawk on the 23rd of February 1838, with a determination to make the most of my time and journey, also of the small pecuniary allowance made for the purpose, in antiquarian and other research beyond the mere exploring of the coal localities.

I reached *Mednipur* on the morning of the 24th; left again at 9 p. m. and arrived at *Jaleswara* (*Anglice Jellasore*), the following morning, the 25th; I carefully examined the bed of the *Subanriká*, but could not discover any trace of coal.

I was shewn an old musjid on the bank of the river close to the village; over its centre arch is an Arabic inscription in the *Toghra* character of which I took a facsimile; it is a quotation from the *Korán* and apparently the name of one of the *Pathán* emperors of *Gaur*; the musjid is very small and built in the rudest style with blocks of laterite taken from some demolished temple; there has been a small oblong area to it enclosed by a stone wall, having four small flanking towers at the corners and a gateway in the centre of the eastern face, the whole is now nearly demolished.

About four miles hence to the northward on the right (or south) bank of the river, are the remains of a very extensive fortification the history of which is buried in oblivion; I had intended to have visited this place on my return, but was prevented by sickness.

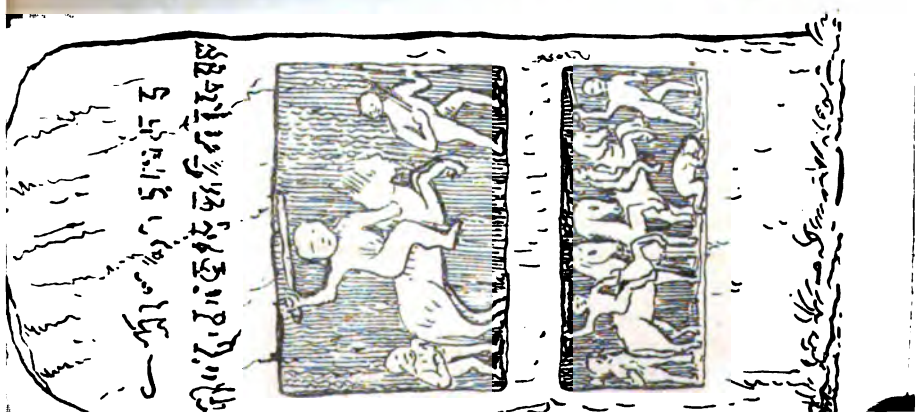
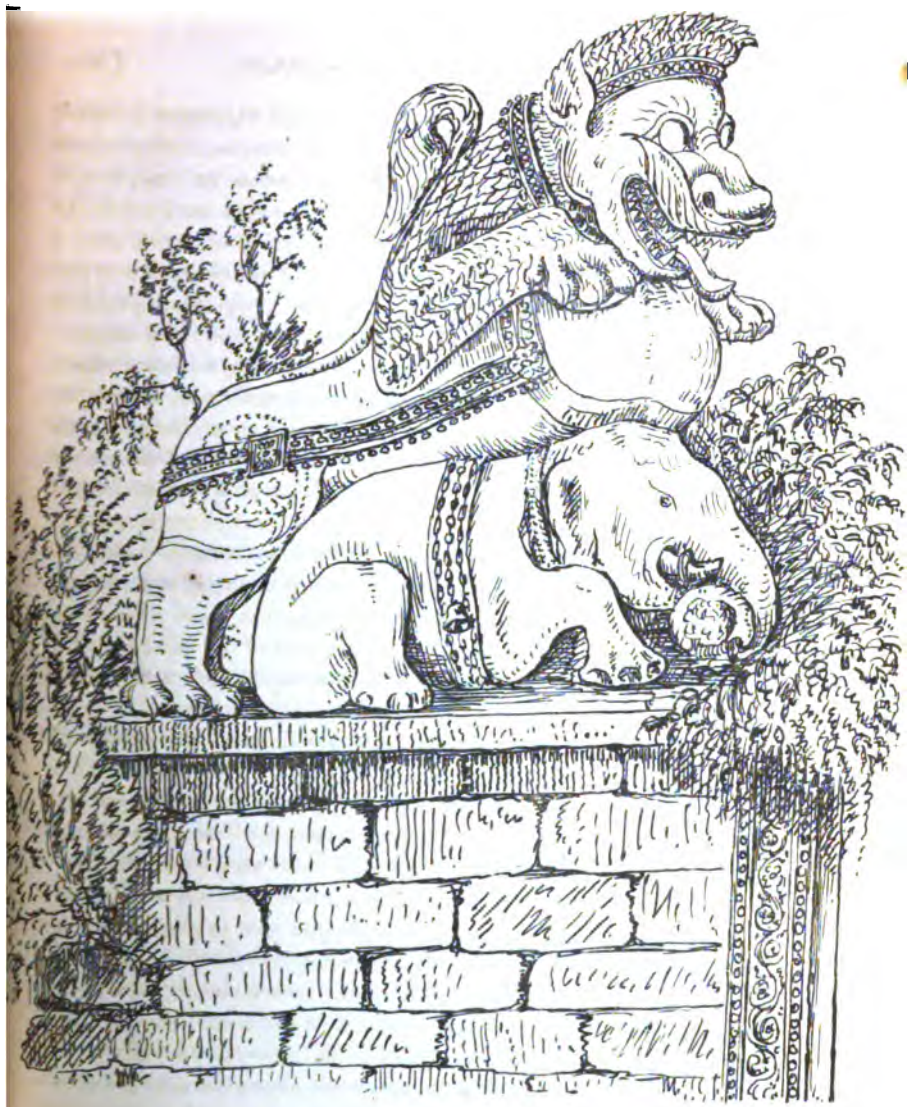
I left *Jaleswar* at 10 P. M. and reached *Baleswar* (Anglic: *Belasore*), the next morning (the 26th) at sunrise, having stopped for half an hour at the *Burabalang* river to search for fragments of coal. I was unsuccessful. In the night I left again on a trip to the *Neilgiri* hills at *Neilgarh*, distant about 12 miles, which place I reached at daybreak. *Neilgarh* is the capital of the petty state of that name and is the residence of the *râjas*; it is an insignificant place with a few pukka buildings belonging to the *râja*, also some small temples.

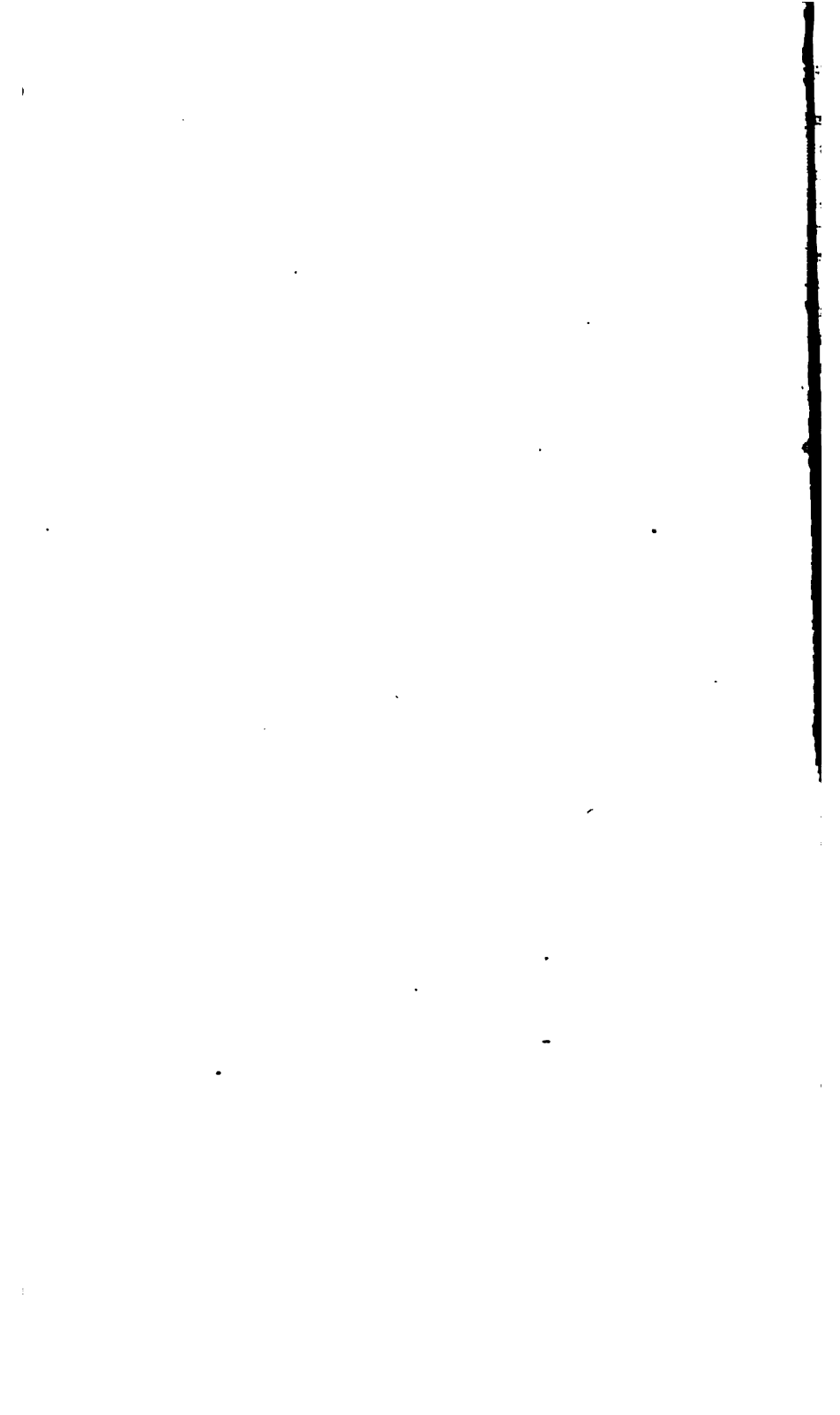
I had been told that there were caves in this hill, but upon inquiry on my arrival I was assured that I had been misinformed, and that the only curiosities were two huge blocks of stone $\frac{2}{3}$ ds of the way up the hill which are venerated and known by the names of *Domurra* and *Domurrani*. I accordingly climbed up the hill, and being much fatigued rested on the rock: I had a noble view of the sea and the surrounding country which in some measure repaid me for my trouble. My guide assured me with the gravest face possible that these two shapeless stones were deities in that disguise awaiting the time when the sea will rise above the low lands and wash the foot of the hills, when they (the *Thakûrs*) will sit and enjoy themselves, fishing with a rod and line; there is no accounting for such an absurd tradition.

The rock of this lofty hill is a fine close-grained grey granite with large veins of quartz.

Having taken a cup of tea I retraced my steps to *Baleswar* where I arrived at 3 P. M. I left the following evening for *Jâjipur*, which place I reached at noon on the 1st. I had expected to meet a native friend of mine, Moonsif ABDULAHED, with whom I intended to pass a couple of days exploring the antiquities of *Jâjipur*, but to my regret he had left two days' previous for a place twenty miles off. I made every possible inquiry, but was assured that there were no inscriptions or other objects worthy of notice beyond what I had seen in November 1836, already described in my journal, vide page 53 Journal As. Soc. No. 73 for January 1838; I examined the huge idols near the shrine: it would upon more mature consideration be an useless expense removing them, as they are much mutilated.

I went to the temple where the eight idols are placed, which are said to have been dug out of the bed of the river and drew five of them. There are very faithful representations of the whole (nine idols) in the MACKENZIE collection of plates; also of the three colossal figures above mentioned. Towards the evening I was informed that there was a stone with writing and sculpture upon it situated in the centre of an extensive plain about six miles to the south-westward. I procured bearers and





started at sunset, having made previous arrangements for proceeding on to *Cuttack* after examining the stone ; I reached the spot after an infinite deal of trouble and annoyance, for I could not get a single villager to tell me where it was ; all denied there being any at all, such is the provoking insolence and knavery of most Ooreyahs. At 8 p. m. my bearers having got hold (by good luck) of the head-man of the village, he led me to the spot which was such as described ; the stone is about three feet above the ground and of semicircular shape, having one face flat about one foot wide on which are the remains of a short inscription and a piece of rude sculpture (vide plate XXXVIII. fig. 1). I was assured that the stone was sunk very deep in the ground, in fact that it reached "patal" (the regions below). Having sketched the stone I proceeded on my journey to *Cuttack*, where I arrived at noon the following day.

I remained two days at *Cuttack* and then proceeded to *Kandrak* to see the famous temple known by the name of "the black pagoda." Owing to the bad bearers I had had for the two last stages, I did not reach *Kandrak* till one o'clock the following day, instead of at sunrise as I had expected, added to which I had such a bad headache when I arrived, from exposure to the sun and want of food, that I was quite unable to do any thing further than examine the noble ruin.

The temple has been originally very similar in general design to that of *Jagannáth* at *Pooree* ; the great tower fell to the ground many centuries ago ; but one corner is still standing to the height of 80 or 100 feet and has (at a distance) the appearance of a crooked column. Such is the extent and minuteness of the sculpture on the pyramidal building (the anti-chamber) now remaining, that it would require a sheet of paper almost of the size of the original to give all the minutiae of sculpture. The largest figures (which are mostly highly obscene) are about four feet high : there is one row of them however round the dome (if it may be so termed) which are neatly executed and well worth removing to the museum : they represent musicians in dancing attitudes, playing on drums, trumpets, &c. &c. &c. The whole edifice is of a reddish stone found in the neighbourhood, which appears to be a kind of mottled breccia with a great proportion of quartz and lithomarge. The only black stones in the building, are those with which the three doorways to the north, east and south are lined : they are huge slabs of chlorite richly carved.

The *Kúrda rája* has demolished all three entrances and is removing the stones to *Pooree* ; the masons pick out the figures and throw them down to take their chance of being broken to pieces, (which most of

them are ;) such they leave on the spot, those that escape uninjured are taken away.

The elegant doorway called the *Nawagriha*, a drawing of which is to be found in the 15th Vol. of the Asiatic Researches, has been completely destroyed.

I remarked three or four niches in the different doorways in which slabs of chlorite with inscriptions had existed; they were removed about 1815 or later by some European officer, but what has become of them I cannot ascertain: it is probable they were sent to Europe. It would be worth while to institute some inquiry after these valuable records of antiquity which might throw some light on the origin of this wonderful specimen of human ingenuity and labor, and would also add to the knowledge already obtained from such records regarding the early history of *Kalinga*.

Before the northern doorway, are two colossal elephants nearly buried in the sand and ruins, with drivers seated on them and foot soldiers beside them; the elephants are supposed to be covered with jewels and armour; before the southern entrance are two horses and attendants to each, equally elegantly caparisoned; before the eastern doorway, are two huge lions rampant with an elephant crouching beneath each; one of these is still erect, of which I took a drawing; see fig. 2, Pl. XXXVIII. The doorways are severally called after the animals which guard them; viz. the *Sinha*, *Aswa*, and *Hasti darwaza*.

Having procured sixteen bearers I proceeded on to *Pooree* after dark and reached the bungalows on the beach at 3 A. M. I had my palkee placed by the sea side and enjoyed the breeze and the roaring of the surf.

I remained during the day (the 6th March), and walked for a mile or more on the beach at low water, picked up many shells but very few perfect. I could only obtain two coins at the shroffs, although I had anticipated better success, having been promised many.

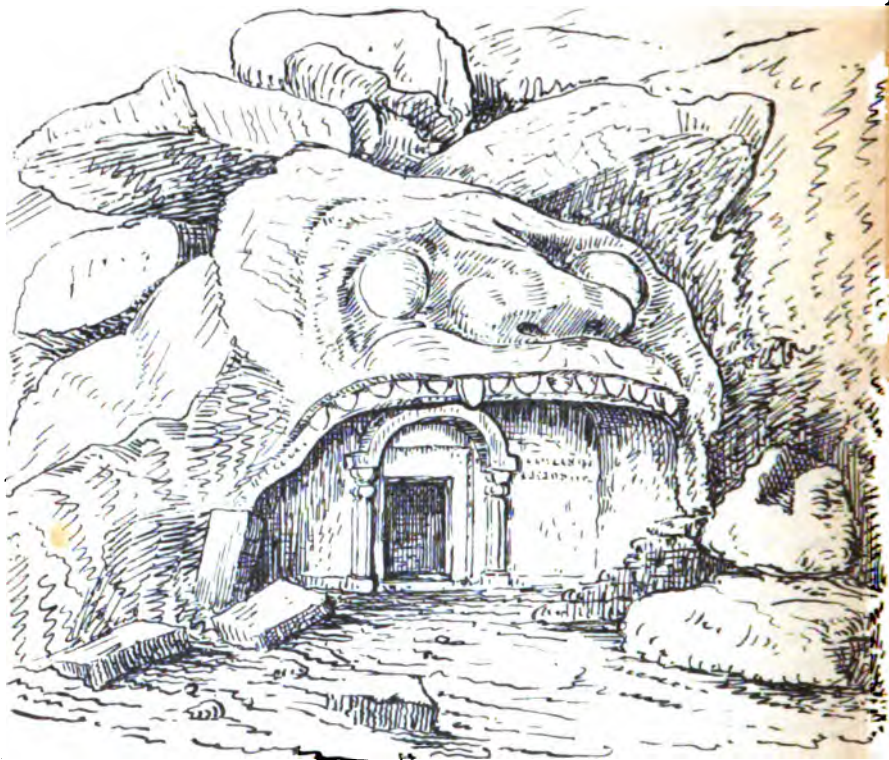
I made every possible inquiry about antiquities and inscriptions, but could learn of none except those in the great temple of *Jagannath* and in the *Gondichagarh*: it would be desirable to get facsimiles of these taken by some intelligent Hindu.

At four P. M. left for *Kurda*, at which place I arrived at sunrise: there are no ruins of any interest such as might have been expected, when it is considered that it was for many years the capital of *Orissa*; the rude walls of the old moor or palace are still standing, also some of the city gateways.

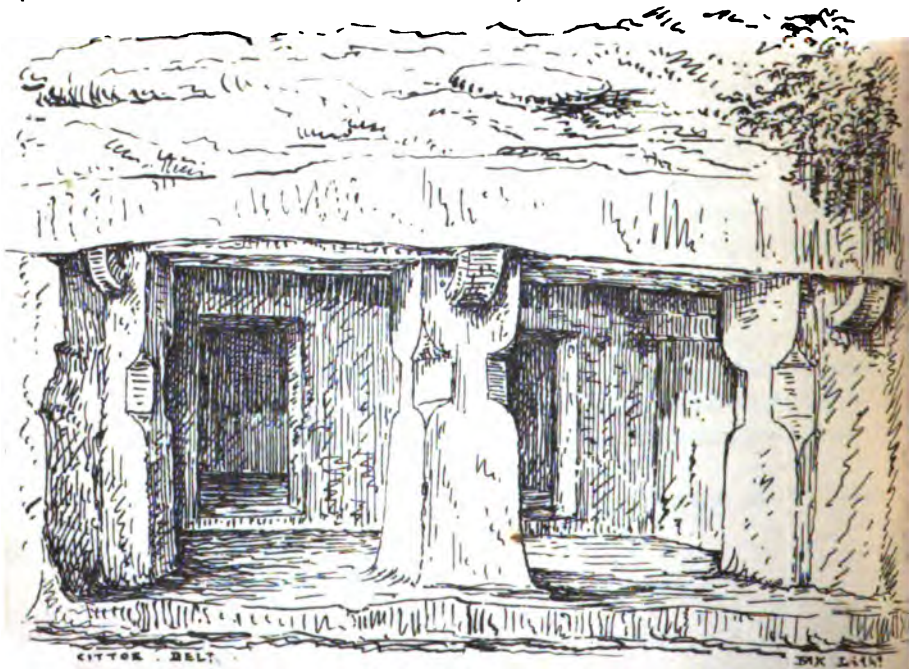
The laterite and breccia are the materials in common use for buildings of all kinds.

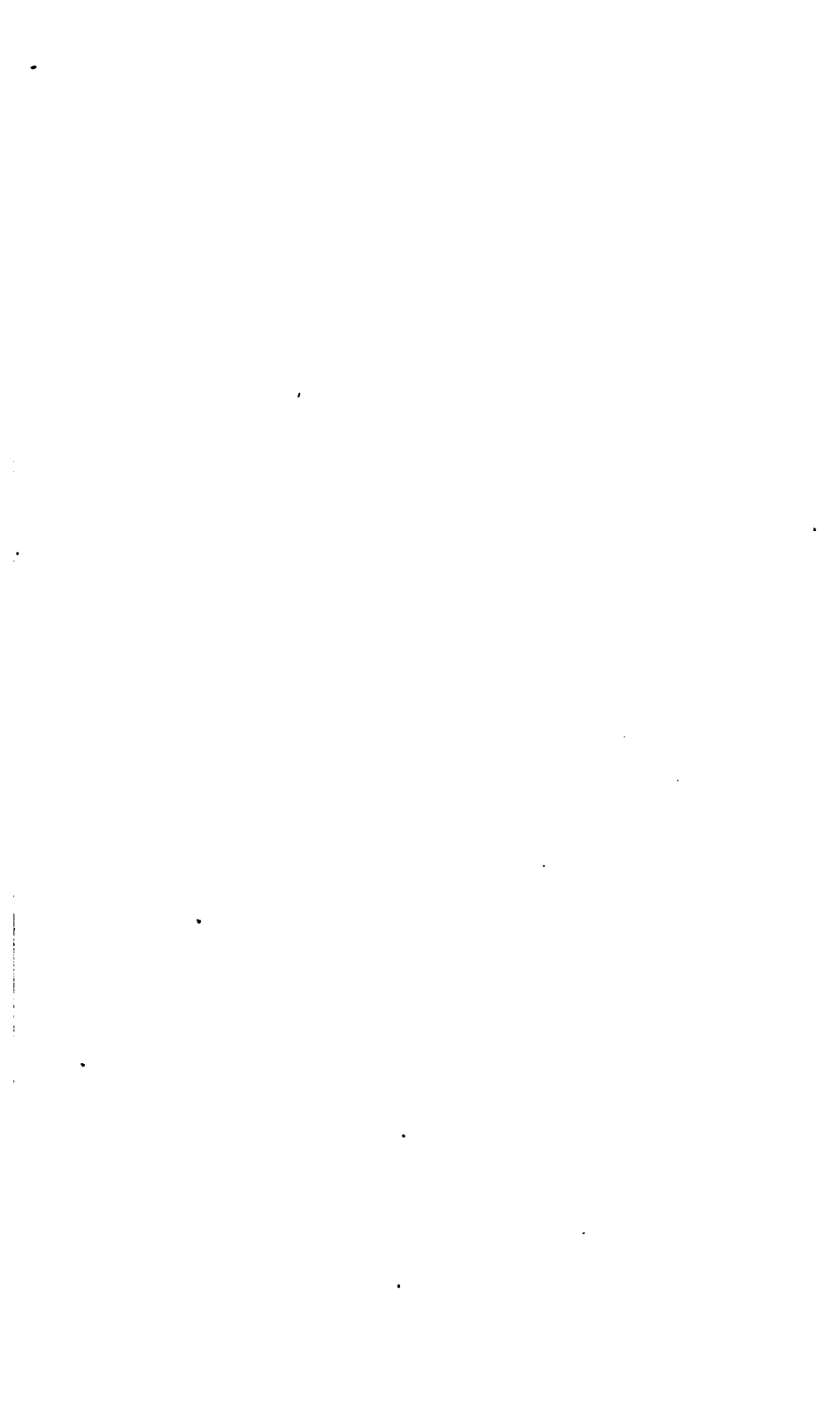


TIGER CAVE, UDAIYAGIRI



ANOTHER CAVE, UDAIYAGIRI.

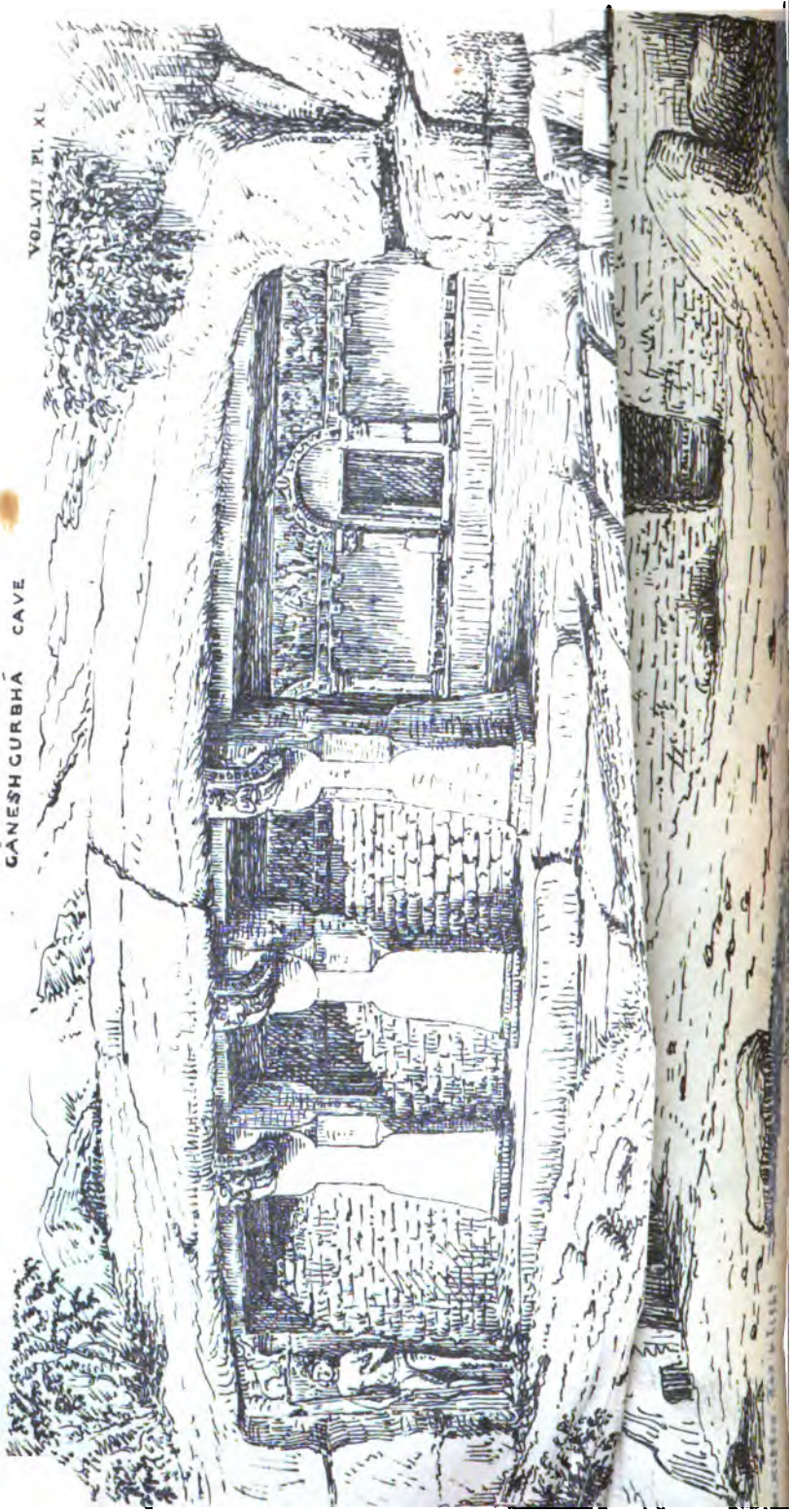




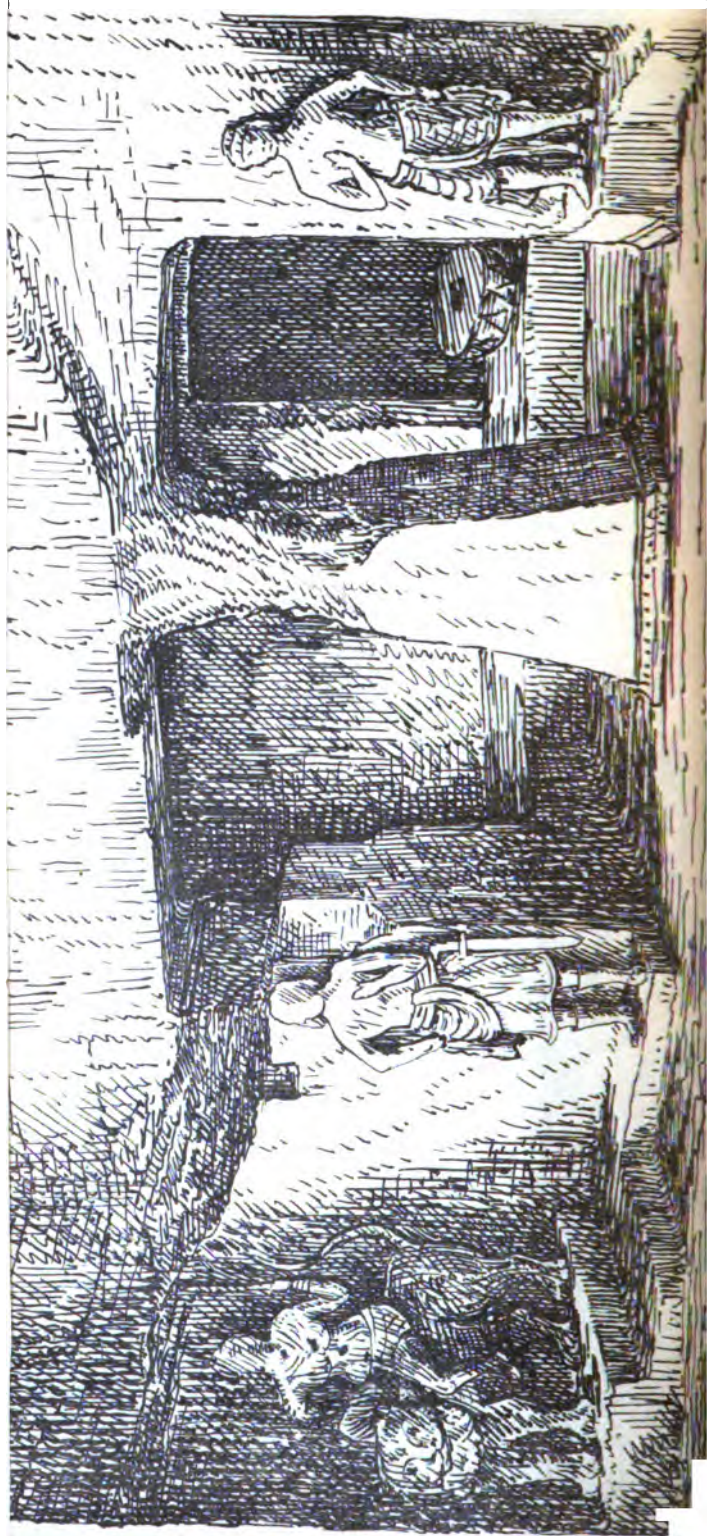
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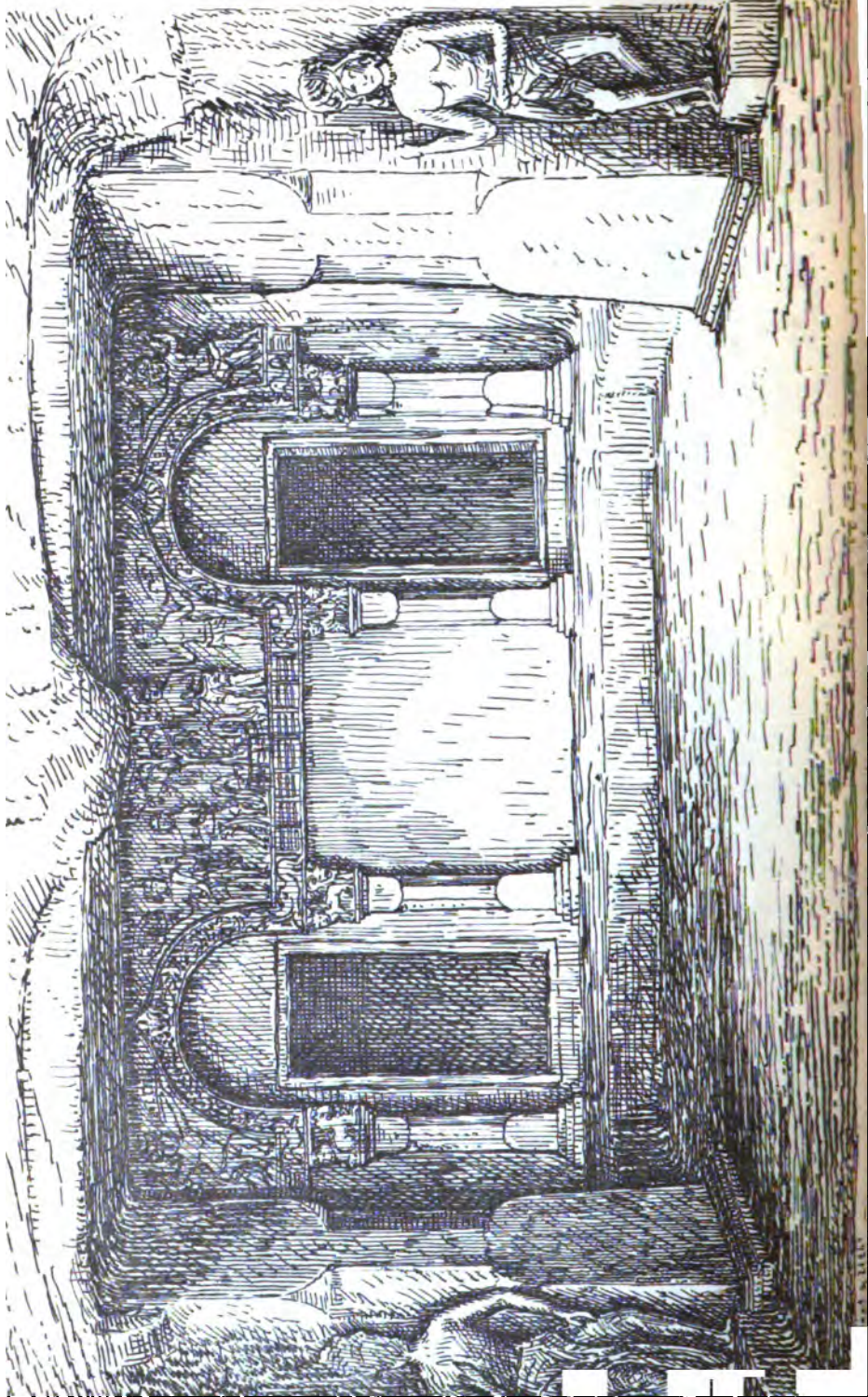
GĀNĒSH GURBHĀ CAVE

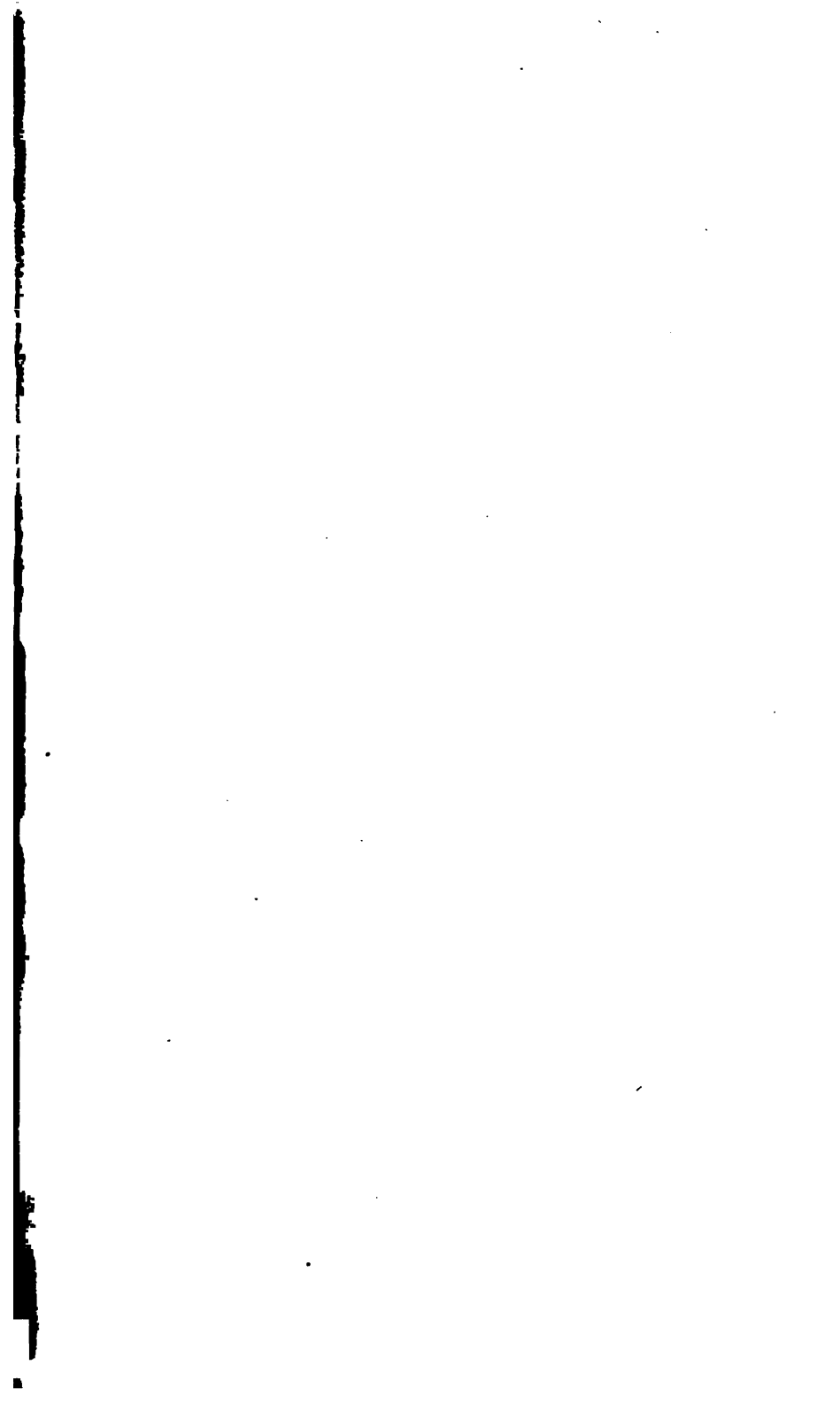
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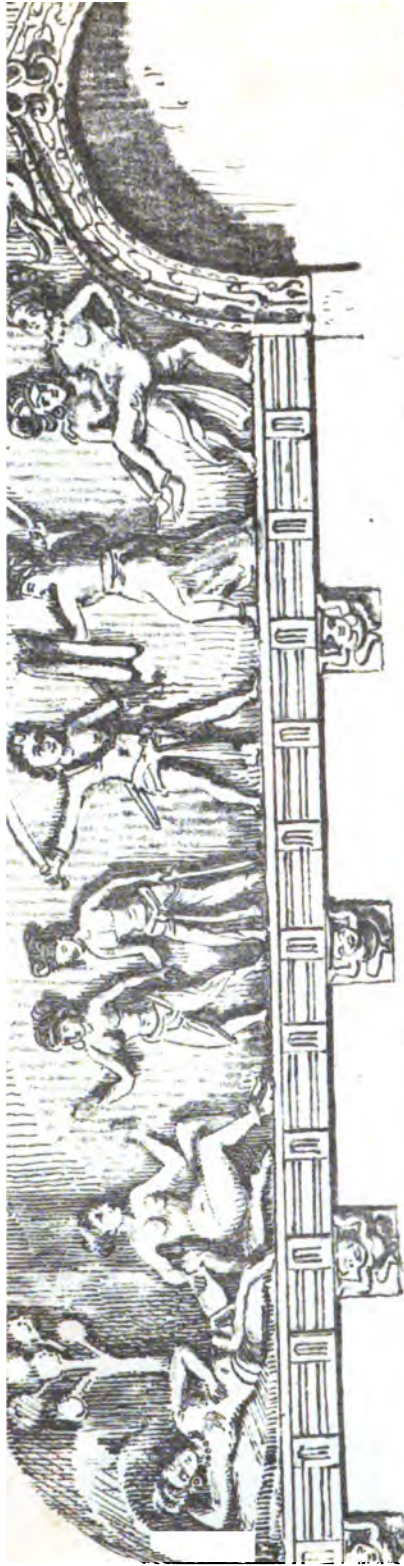












Illustrated by M. N. S. Pillay
Lith. by J. P. S. Pillay

There is a fine spring of water issuing from the northern face of the great hill ; near the summit, there is a small temple with an image of SIVA from the navel of which the water is made to run ; a short way beyond this spot, over the top of the hill, and on the southern face, is a large cleft in the rock forming a kind of cavern, it is called "*Pandeb Garha*" or "*Pancha Pandava*," it has for centuries been the abode of ascetics who have at different ages scratched their names and short sentences on the "sthāns" or hewn seats within the cavern. I did not deem them worthy of being copied : they were mostly in Kutila character, Telingana, Canara, &c. &c.

At two P. M. I proceeded (dawk) to *Atteiri*, distant eight miles to visit the hot spring, the temperature of which was 115° only, owing to the body of cold water surrounding it being penned in to form a tank for the purpose of irrigation ; the spot where the spring rises is indicated by a number of small models of royal umbrellas made both of black and of white thread wove over twigs, placed there as offerings in honor (the white) of SIVA and the black of VISNUP.

Close to the village of *Atteiri* is a small tank hewn out of the laterite rock in which I found a kind of fresh water sponge adhering to the stones, it was perfectly white and had a very delicate and beautiful appearance. I brought away a piece but in the course of a few hours, the insect dying, it became putrid and decomposed, so that I was obliged to throw it away.

I returned immediately to *Kārda*, (as it was past sunset) and reached that place at eight P. M. I left again at five A. M. for *Khandgiri* and owing to the insolence and perverseness of the bearers, who wanted to take me in spite of every remonstrance to *Bhuvaneswar*, I did not get there till one P. M. I had only ten miles to travel, yet as late as eleven A. M. (six hours), they only took me eight miles, when they set me down and went away to cook their meals. I was then obliged to lock up my palkee, and taking my drawing materials and pittaraks on coolies, I walked the rest of the way in the heat of the sun : the bearers brought the palkee up a few hours afterwards. In the meantime having got some milk and a few plantains to refresh me, I set to work to draw all that was most worthy of notice ; I commenced work at one P. M. and continued till long after dark, using a torch : I regret that I lost so much time owing to the conduct of the bearers, and that I could not remain another day. Plates XXXIX. XL. XLI. and XLII.

At ten P. M. I started again for *Bhuvaneswar*, and reached that place at two A. M. I arose at daybreak and set to work to copy an inscription in the temple of *Kedarswar* and tried to take off impres-

sions several times, but not succeeding, I copied it accurately in pencil*. I found that in spite of all my measures and efforts that the brahmins would not allow me to enter the great temple to copy the numerous inscriptions there; therefore I set to work to draw the sculpture of some of the elegant temples around me, but it coming on to rain hard I was obliged to give it up, not however, till, with the shelter of a chatta and a sheet, I completed a sketch of *Ling Rāj* temple with the *Bindsāgur* tank and buildings.

The rain still continuing, I left at four p. m. for *Cuttack* where I arrived at ten a. m. the following morning, after passing a very stormy and wet night and being thrown down in my palkee frequently; on my arrival I received a letter from my friend, the Secretary, informing me of his discovery of the name of *ANTIOCHUS* in the *Girnar* and *Dhaulī* inscriptions, and requesting me to recompare my transcript and correct any errors. I instantly laid my dawk and left at six p. m. for *Dhaulī* which curious place I reached before daybreak and had to wait till it was light; for the two bear cubs which escaped me there last year, when I killed the old bear, were now full grown and disputed the ground. At day break I climbed to the *Aswastuma* and cutting two large forked boughs of a tree near the spot, placed them against the rock: on these I stood to effect my object. I had taken the precaution to make a bearer hold the wood steady, but being intent on my interesting task I forgot my ticklish footing; the bearer had also fallen asleep and let go his hold, so that having overbalanced myself the wood slipped and I was pitched head foremost down the rock, but fortunately fell on my hands and received no injury beyond a few bruises and a severe shock: I took a little rest and completed the work.

I then climbed to the cavern and attempted to penetrate it, but the stench of the bats and the dung of those animals and cockroaches prevented my going more than 20 or 30 yards. I procured a few specimens of the curious kind of bats occurring here, then returned towards *Cuttack*, and arrived at six p. m. much satisfied at having been able to effect so desirable an object.

I took one day's rest and the second day at five p. m. left again on my march to *Tālchīr* in search of coal. I had sent on my tent and servants to *Kakhar* the first march; I passed the night there and marched to *Govindpur* in *Dhenkunnal* before daybreak the next morn-

* We have unfortunately mislaid this inscription, or rather have placed it carefully by, where we cannot put our hands on it. When found, an account of it shall be given in our series of inscriptions, which daily multiplies, and engrosses more and more of our time and attention.—ED.

ing in company with my friend Mr. R. BERTSON of *Cuttack*: there was dense jangal the whole way; the soil is stiff red marl with much laterite; there are numerous small hills on either side of the path; the rock is a coarse sandstone, a continuation of that formation alluded to in my report on the volcanic rock of *Neuraje* in No. 74 for February 1838, of the *Asiatic Journal*. Shingle occurs occasionally: I am of opinion that coal could be found at some depth below the surface. There is a great deal of cultivation about *Govindpur*: there is a nulla the water of which is penned in after the rains for the purposes of irrigation. A short distance north of the village are the remains of a dam of masonry close to the extensive ruins of some former city called *Ton-lágarh*.

The natives have a tradition that this is one of the forts of a race of people called *Dehálliá*, who formerly had possession of these hill provinces.

On the 15th I marched to *Deogaon*, a large village with several temples, tanks, and wells at the foot of the famous hill of *Kapiláss*; in the evening we climbed this lofty hill by a narrow but even path winding round the southern face: the ascent is very steep and in many places steps are hewn out of the rock. I should think it must be about one and half miles to the glen near the summit where there is a beautiful spring of fresh water issuing from a part of the rock which, different from the other parts of the hill, is stratified. There are several small but ancient temples dedicated to MAHADEVA under the name of *Kapiláss Mahadeo*; they were built by the *Gajapati* rája PRATÁP RUDRA DEVA. The brahmans relate that the rája having incurred the guilt of killing a bull, had a curse pronounced on him; he went to *Pooree* and asked of *Jagannáth* what he should do to obtain forgiveness; the deity replied "Go to *Mount Kapiláss* and there remain doing penance until your black raiments turn white." Having after a time obtained the favor of SIVA he built the temples and endowed them out of gratitude for his absolution, since which time the spot has become a place of constant worship, a large fair is held annually when pilgrims flock to it from all parts of *Orissa*.

It was quite dark before we reached the foot of the hill, we were met by several paiks who had been sent to light us home to our tent, they had torches made of slips of Sissoo wood, tied into long narrow bundles which once lighted burn to the last morsel, emitting a very strong light with a powerful and delicious aromatic smell, they are in common use throughout the *Girijit* (hill states).

III.—*An examination of the Páli Buddhistical Annals, No. 3. By the Hon'ble GEORGE TURNOUR, Esq. Ceylon Civil Service.*

[Continued from Vol. VI. p. 737.]

In the two preceding articles, an attempt has been made to give a connected account of three great Buddhistical convocations held in India; as well as to establish the authenticity, and to define the age in which those Páli Annals were compiled from which that account was taken. In due course, in an inquiry chiefly entered into for the illustration of the historical data contained in these records, the next subject for examination would have been the genealogy of the kings of India, had the chronology of the Buddhists anterior to the age of SÁKYA, exhibited the same degree of authenticity, that the portion subsequent to that era has been found to possess.

In this respect, however, the Buddhistical writings are unfortunately as defective as the Bráhmínical. Both the chronology and the historical narrative prior to the advent of GO'TOMO' BUDDHO, are involved in intentional perversion and mystification; a perversion evidently had recourse to for the purpose of working out the scheme on which he based that wonderful dispensation, which was promulgated over Central India, during his pretended divine mission on earth of forty-five years, between 588 and 543 before the birth of Christ; and was subsequently recognized, almost throughout the whole of Asia, within two and half centuries from that period.

Your invaluable discovery of the alphabet in which the inscriptions, undeciphered for ages, which are scattered over India, are written, having proved that those inscriptions are, for the most part, Buddhistical, and composed in the Páli language, will in themselves have afforded a powerful incentive to the oriental scholar to devote his best attention to the examination of the ancient annals of that creed still extant in that language. And when, on the one hand, by an extraordinary and fortunate coincidence, the events recorded in those inscriptions are found to be commemorative, chiefly, of the edicts of the identical ruler of India, of whom the most detailed information is given in the only Páli historical work yet brought to the notice of the European literary world; and on the other, by the preposterous pretensions of the Buddhists, their mystified legends of antiquity are solemnly put forth as an equally authentic and continuous history from the commencement of the creation, unless timely precaution be taken to avert the delusion, an exaggerated amount of expectation may be created, which must unavoidably end in a proportionate measure

of ultimate disappointment, involving, perhaps in that reaction the authentic portion also of these annals, for a time, under one general and sweeping disparagement.

It is very desirable, therefore, that, if possible, the nature, the extent, as well as the motive, for this mystification should be explained, before I advert to those portions of the Pāli Annals which treat of events of *greater antiquity than twenty-four centuries*. I profess not to be able to show, either the age in which the *first* systematic perversion of the Buddhistical records took place, or how often that mystification was repeated; but self-condemnatory evidence more convincing than that which the *Piṭakattaya* and the *Aṭṭhakathā* themselves contain, that such a mystification was adopted at the advent of SĀKYA cannot, I conceive, be reasonably expected to exist. In those authorities, (both which are still held by the Buddhists to be inspired writings,) you are, as one of their cardinal points of faith, required to believe, moreover, that a revolution of human affairs, in all respects similar to the one that took place at the advent of SĀKYA, occurred at the manifestation of every preceding BUDDHA. The question, therefore, as to whether SĀKYA was or was not the first disturber of Buddhistical chronology, is dependent on the establishment of the still more important historical fact of whether the preceding BUDDHĀ had any existence but in his pretended revelation. For impartial evidence on this interesting question, we must not, of course, search Buddhistical writings; and it is not my design to enter into any speculative discussion at present.

It is, however, not unworthy of general remark that, as far as the surviving records of antiquity will admit of a judgment being formed, the learned consider it to be established that the Egyptians and the Hindus, the two nations who earliest attained an advanced condition of civilization, both preserved their chronology underanged, till about the age in which Buddhism acquired its greatest spread over the civilized regions of Asia; and that it was only then that the propounders of religious mysteries in Egypt and in those regions attempted to remodel their historical data, attributing to their respective nations a greater antiquity than that previously claimed by them. HÆCATORUS is considered to have visited Egypt about the middle of the fifth century before Christ. A comparison of the information collected by that historian, with that obtained by DIODORUS four hundred years later, shows that the Egyptian priests had in that interval altered their traditions considerably, so as to throw the commencement of their history much further back. It appears to be equally proved, by the evidence still extant of the information collected

by MEGASTHENES, during his embassy to India, in the fourth century before Christ, that the chronology of the Hindus, had not been mystified (to the extent, at least, it is now found to be) up to that period; for that MEGASTHENES is represented to bear testimony that the Hindus had not carried back their antiquities much beyond six thousand years, and that the Hindus and the Jews were the only people who had a true idea of the creation of the world. Although SĀKYA closed his career in B. C. 543, his creed had not spread over Asia till after the conversion of Aśo'ko, and the dispersion of the missionaries to propagate Buddhism in the year after the third convocation, which was held in B. C. 309; and the general adoption of the Buddhistical derangement of historical data beyond Central India, could only have gained ground with the extension of the creed by which it was promulgated. Thus much then may safely be inferred from these authorities, that the chronology of the Egyptians, the Hindus and the Buddhists (the last two perhaps ought not to be separated till after GO'TOMO' BUDDHO's assumption of Buddhohood) remained, underanged, till about the age of his advent; and that the alteration of the chronology of the Egyptian and Buddhists had been completely effected between that epoch, and the date at which Buddhism attained its most extended ascendancy. In regard to the Hindu chronology, within my limited means of information, I am only able to learn, that MEGASTHENES found it of the degree of authenticity already mentioned, in the fourth century before Christ, and that, as far as we can gather from the *Rājā Taringini*, the only continuous Hindu history yet discovered, its mystifications extend to so recent a date as the seventh century of our era. The absence, however, of more precise evidence as to the exact date at which the original derangement of the Hindu chronology actually took place, by no means justifies the conclusion that it was not *first* disturbed at the same time as that of the Egyptians and Buddhists.

The temptation to prosecute these analogies further is almost irresistible, under the fresh interest given to the inquiry by your discovery, in the ancient Buddhistical inscriptions, of the names of rulers of Bactriana and of Egypt in the edicts of Aśo'ko, the identical monarch in India, in whose reign the alteration of the Buddhistical chronology must have been generally recognized. The data, however connected with this question are not yet fully prepared for examination; and even if they were, I should not presume to use them till the public had the benefit of your learned digest of these materials, the fruits of your own successful researches. My attempt to give a translation of

the *Lāt* inscriptions, before the result of your own labors reached me, was made exclusively at your request.

The task I have assigned for myself on the present occasion is free from every embarrassment but the *embarras de richesse*, arising out of the necessity of selecting from, and condensing, my superabundant materials, to adapt them for your Journal. In accordance with the plan hitherto pursued by me, I limit myself to furnishing literal translations, unaccompanied by any further observations from myself than are indispensably necessary for the due comprehension of the passages quoted either from the *Piṭakattayaṇ* or the *Aṅṅakathā*.

Buddhists, as I have already stated, maintain that all they possess of historical data to the date of the third convocation are either the contemporaneous history of SÁKYA and his disciples, or the revelations of anterior events disclosed by the power of inspiration with which they were endowed. My first extracts, therefore, will be explanatory of this power, which is designated the *Pubbénivāsañāṇa*.

As it is also a tenet of their faith, not only that the world is destroyed and reproduced after the lapse of certain, to us, undefinable periods, but that even during the existence of each creation, or *kappo*, the condition of man undergoes such changes as to reduce the term of human life, from the incalculable *asankheyyaṇ* to ten years, accompanied likewise by a proportionate deterioration of the mental faculties; and as such a deterioration invariably intervenes between the advents of any two BUDDHÁ, though manifested in the same *kappo*, expressly in order that revelation, and revelation alone, may connect the histories of the preceding with each subsequent BUDDHO—my second series of extracts will consist of those passages of these revelations which are descriptive of the destruction and reproduction of the universe and of mankind, both generally, and, in somewhat greater detail, as regards the last creation of the world.

Thirdly and lastly, the extracts will contain an abridged notice of the three BUDDHÁ of this *kappo* who preceded SÁKYA, and a fuller account of SÁKYA himself to the period of his delivering the discourses contained in the section called the *Buddhawansa*, the commentary on which chiefly furnishes my extracts.

When these points have been placed before those who take an interest in this inquiry, in the light in which they are regarded by Buddhists themselves, the scope and design of the parties who compiled the annals from which all our data are derived, are less likely to be misunderstood.

Wherever an isolated passage of the *Piṭakattayaṇ* is found to contain the information sought in an integral form, the preference has always

been given to it over the *Aṭṭhakathā*. On subjects necessarily involving continuous narrative, the information could in general only have been obtained by reference to several parts of the *Piṭṭakattayaṇ* (as the narrative portion of that compilation consists principally of unconnected parables); and by forming a connected statement from those references. In those cases, I have preferred at once availing myself of the continuous statement frequently furnished by BUDDHAGHOSO in his *Aṭṭhakathā* or commentaries on the text of the *Piṭṭakattayaṇ*. My object being to select for consideration, in every instance, those points which are considered of the greatest importance, not by the European inquirer but by the Buddhist commentator; and to present them also, as far as possible, in the language used by BUDDHO, his disciples, and the last great commentator on his doctrines, BUDDHAGHOSO.

Concerning the Pubbeniwasānanan, Extract from the Paṭisambhīdan, the twelfth book in the Khuddakanikāgō in the Suttapiṭako.

"He (who has attained the *arahat*, sanctification) is endowed with the power, called *Pubbeniwasānanan*, of revealing his various former existences. Thus I am acquainted with one existence, two existences, three existences, four existences, five existences, ten existences, twenty existences, thirty existences, forty existences, fifty existences, a hundred existences, a thousand existences, and a hundred thousand existences; innumerable *Saswaṭṭa-kappē*; innumerable *Wissuṭṭa-kappē*; innumerable *Samvattawattāṭṭa-kappē*.

"I know that I was born in such a place, bearing such a name, descended of such a race, endowed with such a complexion: that I subsisted on such an aliment, and was subjected to such and such joys and griefs, and was gifted with such a term of existence: who after death (in each of those existences) was reproduced in such a place, bearing such a name, descended of such a family, endowed with such a complexion, nourished by such aliment, subjected to such and such pains and pleasures, gifted with such a term of existence: and who, after death in that existence, was regenerated here. Thus it is that he who is endowed with the *Pubbeniwasānanan* is acquainted both with his origin and external appearance (in his form existence)."

The *Aṭṭhakathā* called the *Saddhammappakāsinī*, on the *Paṭisambhīdan* affords the following explanation of this passage.

"This power of *Pubbeniwasānanan* six descriptions of beings exercise; viz. the *Tiṭṭhiyā* (the ministers of other religions), the *Pakatisavakkā* (disciples ordinary of BUDDHO), the *Asiṭṭamahāśāvakā* (his eighty principal disciples), the *Dvā-aggasāvakkā* (the two chief disciples), the *Pachchēkā Buddhā* (inferior Buddhas), and the *Buddhā* (supreme Buddhas).

"Among these, the *Tiṭṭhiyā* have the power of revelation over forty *kappē*, and not beyond, on account of their limited intelligence; and their intelligence is limited as they recognize a limitation to corporeal and individual regeneration.

"The ordinary disciples (of BUDDHO) have the power of revelation over a hundred and a thousand *kappe* being endowed with greater intelligence.

"The eighty principal disciples have the power of revelation over a hundred thousand *kappē*. The two chief disciples over one *asankheyyan* and a hundred thousand *kappē*. The inferior *Buddhā* over two *asankheyyānē* and a hundred thousand *kappē*.

Their destiny being fulfilled at the termination of these respective periods (being the term that has elapsed from the epoch of their respectively forming their vow to realize sanctification, to their accomplishment of the same). To the intelligence of the supreme *Buddhā* alone there is no limitation."

Concerning the creation of the world. Extracts from the same Aṭṭhakathā.

"*Bhikkhus!* there are to each *mahā-kappo*, four *asankheyyānā* (the duration of which) do not admit of computation. These are those four. In due course of time, *Bhikkhus* the *kappo* perishes; but the duration of the term (during which it is in process of destruction) does not admit of computation. There is also, *Bhikkhus!* a term during which the *kappo* remains perished, which likewise does not admit of computation. In due course, again, *Bhikkhus!* the *kappo* is regenerated; and for a certain period the *kappo* maintains its regenerated state. The duration of each of which terms is, in like manner, incalculable."

"The four *asankheyyānā* thus explained by *Buddho* in the *Chatussankhakappasutta* (in the fourth chapter of *Anguttaranikāya*), have been made the subject of this *Aṭṭhakathā*.

"There are three modes of destruction; destruction by fire; destruction by water; destruction by the wind; and there are these limitations to the spread of those destructions, prescribed by the position of either the *Abhassaro*, the *Subhakinno*, or the *Wehapphalo Brahmaloka* worlds.

"Whenever the *kappo* is destroyed by fire, it is only consumed from *Abhassaro* downward. Whenever the *kappo* is destroyed by water, it perishes by the water below the *Subhakinno*; and whenever it perishes by the wind, it is destroyed by the wind prevalent below the *Wehapphalo*.

"On each occasion on which a *kappo* is destroyed one *Buddhakkhetta* always perishes: of which there are three descriptions, viz. the *Jātikkhettan*, *Anākkhetta* and *Wisayyakkhetta*. The ten thousand *Chakkavālāni* (or the regions to which birth-right extends), which are bounded by the *Jātikkhettan* belong to the *Jātikkhettan*; which is subject to do homage in this world to *TATHAGATO (Buddho)*, on all occasions from the day of his being conceived in the womb of his mother. The hundred thousand *kōṭṭyo* of *Chakkavālāni* bounded by the *Anākkhetta* (or regions to which his authority extends) appertain to the *Anākkhetta*. The sanctifications or influences of the *Ratanaparittan*, the *Dhajaggaparittan*, the *Atānātaparittan* and the *Māraparittan* extend thereto. All the other endless and innumerable *Chakkavālāni* compose the *Wisayyakkhetta*. In regard to it also, whatever *TATHAGATO* may vouchsafe, that he can accomplish. From amongst these three *Buddhakkhetāni*, whenever the *Anākkhetta* is destroyed, in that identical destruction, the destruction of the *Jātikkhettan* is also comprehended; in as much as in that destruction they are simultaneously involved; and at their reproduction they are simultaneously reproduced. Be it understood, that such is the progression of its (the *kappo's*) destruction and reproduction.

"At any time when a *kappo* is to be destroyed by fire, in the first place, the mighty cloud, the precursor of the destruction of the *kappo*, rising aloft, discharges itself simultaneously over the hundred thousand *kōṭṭyo* of *Chakkavālāni*. Their inhabitants, rejoicing thereat, and providing themselves with every description of seed, sow them. When the crops attain an age at which cattle delight to feed thereon, although thunders growl like the braying of an ass, not a drop of rain falls. The rain lost on that occasion is lost (to that world) for ever. All living creatures dependent on rain for their existence (perishing) are reproduced in the *Brahmaloka* world. So do also the creatures which subsist on flowers and fruits, as well as the *Dēvātā*.

"When such a visitation has endured a certain period, water in every part of the world is dried up. Thereafter, in due course, fishes and turtles also, perishing, are

regenerated in the *Brahmalōko*. Even creatures expiating their sins (in this world) while yet in health, expire, as soon as the seven suns (which ultimately manifest themselves) shine on the creation. As they are not endowed with *Jhāna* they are not (at once) reproduced in the *Brahmalōko*. How then are these to be reproduced (ultimately there) having died of the misery they were enduring, without yet being able to attain *Jhāna*? By the gift of *Jhāna* to be acquired by their (intermediate) reproduction in the *Dēvalōko* (which is inferior to the *Brahmalōko*)."

Here follows a specification of the means by which those, who do not possess the *jhāna* requisite for immediate regeneration in the *Brahmalōko*, acquire it intermediately in the *Dēvalōko*, to which they are admissible without that sanctification. The *Aṭṭhakathā* proceeds.

"At a certain period after rain has ceased (to fall) a second sun appears. After the appearance of the second sun, there is no longer any limitation to, or distinction of, night and day. When one sun sets the other sun rises, keeping up a constant sun shine. Nor is that sun like the ordinary one, in ordinary times. There is neither cloud nor mist, to intercept its rays, but it is as clear as a looking glass. The five great rivers (of the world) together with all the small streams are then dried up.

"From the second to the fifth sun, the lakes and inland seas and the great ocean dry up progressively. At the appearance of the sixth sun, the whole *Chakkavalāni* are involved in one mass of smoke. After the lapse of a considerable period, the seventh sun appears. By its manifestation the whole of the *Chakkavalāni*, together with the hundred thousand *kōṭiyo* of worlds, become involved in one column of fire."

Here follows an account of the extension of the flames to the six *Dēvalōkā*, and from thence to the lower *Brahmalōkā*, till they reach the *Apassarō Brahmalōko*. The fire then subsides, without leaving, even the ashes unconsumed of the worlds that had been destroyed, leaving the universe, above and below the consumed regions, involved in total darkness.

"After the lapse of a long period, a mighty cloud rising, sprinkles a slight shower in drift, which by degrees increasing to streams of the size of the lotus stalk, a beam, the pestle of a rice pounder, and the trunk of a palmira tree, pours down on all the *Chakkavalāni*, and submerges the whole of them that had been destroyed by fire. The power of the wind below and around, prevents the escape of the waters, which are concentrated resembling a drop of water on the leaf of a lotus flower.

"By what means is it that so great a body of water (ultimately) acquires the properties of solidity? By making apertures in various places, access to that body (of water) is afforded (to the wind). Thus by the effect of the wind, it (the water) becomes further concentrated, and acquires further consistency. It then begins to evaporate, and gradually subsides.

"When the flood has subsided to the point where *Brahmalōko* had stood, six *Dēvalōkā* are reproduced. On its subsiding to the point where this world had stood, furious storms prevail, and confine it (the subsiding flood) as the water in a basin covered with a lid is confined.

"On this fresh water gradually drying up, on the surface (of the human world) a delicious coating of earth is formed, like unto the curds on the surface of rice boiled exclusively in milk, without any water, excellent in color, in fragrance and taste.

"At the same time, the living creatures who were the first reproduced in the *Abhassara-brahmalōke*, having completed the allotted term of their existence, and dying there, are from thence regenerated here, in the manner described in the *Agganna-suttān*."

For the elucidation of this interesting subject, I shall here introduce a translation of the *Agganna-suttān*, which is one of the discourses in the *Pāṭiwaḍḍo* section of the *Dīghanikāyo*, of the *Suttapiṭako*, as delivered by BUDDHO himself; instead of restricting myself to the abridged account of the regeneration of the world, which is given in the above *Aṭṭhakathā*.

This *Suttān* was addressed by SĀKYA, to WĀSETTHO and BHĀRADWAJO, the descendants of an illustrious brahman named WĀSETTHO, who had become converts to Buddhism, and entered into the first or *Sāmanēro* order of Buddhistical priesthood. It was delivered at the city of *Sāvatthipura*, at the *Pubbārāmo vihāro*, in the edifice called the *Migārāmātu pāsādo*, which the *Aṭṭhakathā* explains was built by a female of that name.

The discourse opens with SĀKYA's inquiry from these two converted brahmans whether they had incurred the displeasure or reproach of the elder and the other influential brahmans by their apostacy; and they explain the nature of the reproach cast on, and of the disgrace imputed to, them. The principal degradation alleged to the converts is, "That the brahmans are the sons of BRAHMA sprung from his mouth, pure and fair; while the other castes and sects are sprung from his feet, and are black and impure."

I must however, to save space, confine myself to the passages of the *Suttān* which describe the regeneration of the world, and of the human race. SĀKYA thus explains himself* :

"My friends, descendants of WĀSETTHO ! the progress of time is thus regulated. After the lapse of a long period of time, this world is destroyed. On the destruction of this world, living creatures for the most part will be regenerated in the *Abhassara-brahmalōko*.

"They will appear there by an apparitional birth, subsisting on the aliment of felicity, illumined by their own effulgence, moving through the air, delightfully located, and will exist there uninterruptedly for ages.

"My friends, descendants of WĀSETTHO ! in due course, the lapse of time will produce this result. At the expiration of a long period of time, this world will be reproduced again. On the reproduction of the world, for the most part, those living creatures, dying in the *Abhassara-brahmaloko*, return to this world. They appear here also by an apparitional birth, subsisting on the aliment of felicity, illumined by their own effulgence, moving through the air, delightfully located, and exist here also uninterruptedly for ages, in unity and concord, similar to (the cohesiveness of) a drop of water.

"Descendants of WĀSETTHO ! at that period there is neither obscurity nor utter darkness. The sun and moon are unknown: night and day are undiscernible.

* In M. CSOMA's account of the origin of the Sākya race, vol. II. p. 387, the exposition of this history is put into the mouth of MONGALYANA, a favourite disciple.—ED.

Neither month nor the moiety of the month is computed : neither seasons nor the year is perceptible ; nor female and male distinguishable, all creatures being classed under one head (without distinction of sex).

"Descendants of WA'SETTHO ! thereafter, ultimately, at the termination of a long period of time, a savory substance is developed for living creatures, on land and in water. In the same manner that a curd is formed on the surface of boiled milk, in that manner is it developed. It (that savory substance) is fully endowed with the properties of color, fragrance and flavor, in the way in which butter colors cream, such is its coloring property, in the manner in which the honeycomb formed by the small bee is free from impurity, such is its purity of flavor.

"Thereafter, descendants of WA'SETTHO, a certain greedy man, making this observation, 'My friends ! What is this that has been brought about,' licks this savory substance from the surface of the earth, scraping it up with his finger. By his having licked the earth, using his finger, the flavor with which it was imbued, takes entire possession of him ; and the influence of the passions alight on him.

"O descendants of WA'SETTHO ! the rest of mankind, also each adopting the same proceeding from his example, lick from his finger the flavor of the earth, and the influence of the said flavor, from having been imbibed by licking the finger, takes possession of them likewise ; and the passions alight on them also.

"Thereafter, descendants of WA'SETTHO ! these men gathering up the savory substance on the earth with their hands, begin to devour it by the handful ; and in consequence, descendants of WA'SETTHO ! of these men devouring this flavour of the earth, taking it up by the handful, the aforesaid effulgence of these men vanishes.

"On the extinction of that personal halo, the sun and the moon, the planetary system, and night and day become distinguishable. On night and day being distinguished, the half month and the month are discernible. On the half month and the month becoming discernible, the seasons and the year become regulated.

"Descendants of WA'SETTHO ! thus much only was this world (then) degenerated. Thereafter, descendants of WA'SETTHO ! these men having tasted of the flavor of the earth, subsisting thereon, and having no other aliment, lived for ages, to an advanced period of life. According as these men, who had tasted the flavor of the earth, feasting and subsisting thereon, survived for ages, to an advanced stage of life, in that exact proportion, a coarse skin developed itself on their body ; and the possession of a good and bad complexion began to be distinguished. Some of these beings had a good, and other a bad one. In consequence thereof, those gifted with a fine complexion, reproached those who had a bad one ; saying, 'We have a better color than they have.' 'They have a worse complexion than we have.' On account of this pride of complexion, to those in whom the pride of color had been engendered, (the gift of tasting) the flavor of the earth vanished.

"On the extinction of (the gift of tasting) the flavor of the earth, they assembled ; and having assembled, they cried one to another, 'Ah ! taste. Ah ! taste, (it is lost)'. That (ejaculation) even the people of the present day are in the habit of using, on finding any thing of a delicious flavor, 'Ah ! taste. Ah ! taste.' This expression used by the first tribe of mankind they continue to repeat ; but of the origin of this expression they are entirely ignorant.

"Descendants of WA'SETTHO ! on (the gift of tasting) the flavor of the earth being lost to mankind, a substance manifested itself on the surface of the earth, like unto mushroom. It thus came to pass. It was endowed with color, fragrance and flavor. Its color was like that of cream rich with butter. Its purity was like that of the honey deposited by the small bee.

"Thereafter, descendants of WA'SETTHO ! these persons commenced to devour this excrescence on the earth. They who had partaken thereof, feasting and

subsisting thereon, lived for ages, to an advanced period of life. Descendants of WA'SETTHO!, in the proportion in which they partook of this excrement, feasting and subsisting thereon, in that proportion unto those persons did a coarse skin appear on their body; and beauty and unsightliness of complexion became discernible. Some people were of a good complexion, and some were of a bad complexion."

Then followed the same reproaches as in the former case; and this substance also on the surface of the earth, vanished.

On the disappearance of this crust, the creeper (bearing a delicious fruit) called the *Baddalatā* appears "like unto the stock of the lotus;" which also is lost under similar circumstances, and leads to similar lamentations. The *Suttan* proceeds:

"On the disappearance of the *Baddalatā*, the *sāli* (hill rice) manifested itself on a loose soil. It was free from pellicle and husk, of great fragrance, and possessing the properties of rice; which rice they were in the habit of bringing away every evening, for their evening meal: and in the morning, being again renewed in full bearing, they brought it away for their early meal; but by the evening it was again renewed, in full bearing indicating no diminution."

Then follow the same excesses, the same reproaches and the same consequences, as in the three preceding instances. After noticing that they again became sensible of the difference of complexion, BUDDHO proceeds in his revelation as follows:

"To the portion of mankind who had been females (before the destruction of the world) the attribute of the female sex was manifested, and to the male the male attribute. For a while the female gazed longingly at the male, and the male at the female. Unto them, from thus gazing at each other, for a while, sexual desire was produced; and in their body the flame of passion arose. Under the impulse of that burning passion, they indulged in sexual intercourse.

"Descendants of WA'SETTHO! these persons, certain individuals (still free from vice) noticed; and calling out 'Oh the impurity of impure persons!' 'What is this?' 'Can one person act so towards another?' some of them pelted them with earth, and others with ashes and cattle dung.

"Descendants of WA'SETTHO! that which was considered an improper proceeding (*adhammasammatan*) is now recognized to be a proper proceeding (*dhammasammatan*). At that period persons who indulged in sexual intercourse were not permitted for one or two months thereafter, to intermix in a small or great community.

"Descendants of WA'SETTHO! when those who had been addicted to that improper proceeding, had indulged for a while thereon; thereafter they began to build houses, in order that they might conceal that improper proceeding.

"Thereafter, descendants of WA'SETTHO! unto a certain indolent person this thought occurred. 'Why should I give myself the pains of bringing the *sāli* rice, in the evening for the evening meal, and in the morning for the morning meal: most assuredly when I bring it once it would do for the morning also.' Thereupon, descendants of WA'SETTHO! this individual brought away the *sāli* at once, for both the morning and the evening.

"Another individual then going to him said, 'My good fellow, come, let us fetch our *sāli*.' 'Begone (said the other), I have brought *sāli* enough for both the morning and the evening.' From his having seen the proceeding of this individual, bringing his *sāli* at once for the morning and the evening, relinquishing the practice of bringing each meal, he said, 'Friend! that is most excellent.'"

In nearly the same words, other individuals "influenced by each preceding example, proceeded to collect *sāli* for four days and eight days."

"In this manner, descendants of WA'SETTHO! men laying up stores of *sāli*, began to meet together, for the purpose of feasting thereon. Thereupon the inner pellicle formed on the grain of rice, and the outer husk also formed on the grain of rice: and it (the rice stalk) no longer grew at the point at which it was cut down. The loss sustained became obvious; and the *sāli* were only found in clumps (at the places where they had not been cut down yet).

"Descendants of WA'SETTHO! these individuals then assembled, and said one to another, 'Friend! wickedness has descended among men: we were originally produced by an act of our own volition (*manónayā*, an apparitional birth) and lived for a long time, feeding on the aliment of felicity, illumined by the light of our effulgence, and moving through the air, &c.'"

The lamentation then proceeds to specify how these blessings were lost; at the termination of which, the revelation is thus continued.

"Should we now divide off these *sāli* clumps, and set boundaries, it will be most proper:' and thereupon, descendants of WA'SETTHO! these individuals divided off, and set boundaries to the *sāli* accordingly.

"Then, O descendants of WA'SETTHO! a certain individual, impelled by covetousness, reserving his own share, fed on a share not assigned to him, robbing the same. They seized that person, and having seized him, thus admonished him. 'Friend! most assuredly thou hast been guilty of a crime: doth any one, any where, hoarding up his own share, appropriate, unbestowed, the portion of another person? Friend! man, commit not again such an act.' Descendants of WA'SETTHO! this individual answered those persons saying; 'so be it, friends!'"

In precisely the same terms, BUDDHO proceeds to narrate that the same individual committed the same offence again, and was admonished in the same manner. After the third offence, the revelation proceeds:

"Descendants of WA'SETTHO!, some beat him with their hands, some pelted him with (hard) substances, others struck him with clubs. From that period, descendants of WA'SETTHO! the appropriation of things unbestowed (thefts), degradation, fraud and the (consequent) punishments ensued.

"Thereupon, descendants of WA'SETTHO! these men assembled, and having assembled thus deliberated. 'Friends! most assuredly wicked actions have become prevalent among mankind: every where, theft, degradation, fraud and punishment will prevail. It will be most proper that we should elect some one individual, who would be able to eradicate most fully that which should be eradicated, to degrade that which should be degraded, to expel those who should be expelled; and we will assign to him (the person elected) a share of our *sāli*.*'

"Thereupon, descendants of WA'SETTHO! these persons having selected an individual, in person more beautiful, in personal appearance more pleasing, and (in all respects) more calculated to conciliate than any one of themselves was; approaching that individual, they thus invoked him. 'Man! come hither: that which should be destroyed, annihilate most fully; that which should be degraded, degrade most fully; that which should be rejected, reject: we will assign to thee a portion of our *sāli*.'

* The *Aṭṭhakathā* explains that each individual was to pay one *ammāṇam*.

"Descendants of WA'SETTHO! the said individual having replied to those persons, 'Friends! be it so!' he most fully annihilated that which should be annihilated; degraded most fully that which should be degraded; and rejected that which should be expelled; and they conferred on him a portion of their *sākh*.

"Thus the great body of mankind having (*sammato*) resolved or elected; and the party elected being thence called '*Mahā-sammato*,' the first name conferred was '*Mahā-sammato*,' (the great elect;) and being also the lord of ('*Khattiṇṇ*') 'cultivated lands;' he secondly acquired the appellation of '*Khattiyo*'† and as by his righteous administration it is considered that he ('*raṇḍī*') 'rendered (mankind) happy,' thence, descendants of WA'SETTHO! the appellation of '*rāja*' was thirdly acquired.

"Thus it was, descendants of WA'SETTHO! that on this race of '*Khattiyo*,' that illustrious appellation was bestowed, as its ancient original designation. They are descendants of the same, not of a different (stock) of mankind; and of a perfect (original) equality, not of inequality; (exalted) by a righteous, not an unrighteous, act. Descendants of WA'SETTHO, whether among people in this world, or the other world, righteousness (*dhammo*) is supreme.

"Descendants of WA'SETTHO! to a portion of the same people, this thought occurred. 'Friends! among mankind wickedness has descended; theft, degradation, fraud, punishment and expulsion have appeared. It will be most proper that we should ('*bhāḍeyāna*') 'suppress' wicked and impious acts; and they accordingly did ('*bhāḍenti*') 'suppress' wicked and impious acts.

"Descendants of WA'SETTHO! those '*brāhmaṇā*' ('suppressors or eradicators') hence derived their first name '*brāhmaṇā*.' "

The revelation proceeds to explain how the *brāhmaṇā* acquired secondly the appellation '*Jhāyaka*' from their ('*Jhāyenti*') 'exulting' in the wild life they were leading, in leaf huts built in the wilderness; and thirdly, the appellation '*Ajjhāyaka*' from their 'ceasing to exult' in that life; and to explain also that, as in the *Khattiyo* caste they are no other than a division of the same tribe, who were in all respects on a footing of original equality.

"Descendants of WA'SETTHO! the portion of mankind who had formed domestic connections, (and built houses for themselves) became ('*Wissutakammantā*') 'distinguished as skilful workmen or artificers,' and in consequence of their becoming distinguished from their domestic ties and skilfulness, the appellation of '*Wessa*' was obtained."

Buddho then, in the same manner, explains that the *Wessa* also are a portion of the original stock, and repeats the circumstances under which they successively lost the advantages originally enjoyed by mankind.

"Descendants of WA'SETTHO! among those very individuals there were some persons who were addicted to hunting (*luddā*). Descendants of WA'SETTHO! from being called '*luddā*' '*luddā*' the appellation '*suddā*' was formed. It was thus that to this class or caste of *suddā* that name was originally given."

* This individual was SA'KYA in one of his former incarnations.

† 'Kacchtriya' according to the *Hindus* is the military, or warrior caste which with them is the second class, the '*Brāhmaṇ*' being the first.

The revelation again repeats that the *suddā* caste also was originally no inferior class, but a part of the original stock, and proceeds to explain that from each of these castes certain individuals, despising and reviling their own castes respectively, each abandoned his habitation, and led an habitationless life (*agāriyan pubbajitō*) saying, 'I will become (*sumano*) an ascetic or priest.' Hence BUDDHO exemplifies that the ascetic or sacerdotal order was formed, from each of the four castes, and does not appertain to any particular caste; and with reference to the persecution that the converted brāhmanas, whom he was addressing, were undergoing from these, from whose faith they were apostates, he says to them:

"Descendants of WA'SETTHO! even a *Khattiyo*, who has sinned, in deed, word or thought, and become a heretic; on account of that heresy, on the dismemberment of his frame after his death, he is born in the tormenting, everlasting and unindurable hell. Such is also the fate of the *Brāhmo*, the *Wesso* and the *Sudda*, as well as of the *Sumano* or ascetic. But if a *Khattiyo* lead a righteous life, in deed, word and thought; and be of the true or supreme faith, by the merit of that faith, on the dismemberment of his body after death, he is reproduced in the felicitous *suggalōka* heavens.

"Again, descendants of WA'SETTHO! a *Khattiyo*, who in deed, word and thought, has lived a life, partaking of both characters, and professed a mixed faith of both creeds, on account of the profession of the mixed faith, on the dismemberment of his body after death, he partakes both of happiness and misery. Such is also the case in respect of the *Brāhmo*, *Wesso*, *Suddo* and *Sumano* castes.

"Again, descendants of WA'SETTHO! if the *Khattiyo*, subduing the influence of the sinful passions, in deed, word and thought, acquire the seven *Bōdhipakkhiyaddhammā*, he attains the *parinibbāna* which is the result of the acquisition of the *arahat* sanctification. Such is also the case with the *Brāhmo*, *Wesso*, *Suddo* and *Sumano* classes.

"Descendants of WA'SETTHO! if there be any *Bhikkhu* among (any one of) these four castes, who has subdued the dominion of sin, performed that which ought to have been performed, laid aside (the load of sin), fulfilled his destiny, overcome the desire of regeneration (by transmigration), and extinguished covetous desires, he will become an *arahat*, and will be esteemed the most worthy among them, by righteousness, not by unrighteousness.

"Descendants of WA'SETTHO! among mankind, whether in this world or in the next world (*dharmo*) righteousness is supreme.

"Descendants of WA'SETTHO! the following has been sung even by the brāhman *SANANKUMA'RO*.

Khattiyo setṭho janē tasmin yō gottapaṭisāriṇo.

* *Wijācharana-sampanno, so setṭho dhovamānusetṭo.*

* I am not satisfied that I have caught the meaning of this quotation correctly. The *Wijācharanā* are only attainable by a supreme BUDDHO. They consist of fifteen attributes, all appertaining to pilgrimage; and as pilgrimage is performed on foot, hence the "being sprung from the foot of Brāhmad" is considered to be no degradation.

† There is some ambiguity in the above extract, the nominatives singular having no apparent connection with *paṭisāriṇo* a genitive:—in Sanskrit this may be remedied by putting the whole first line in the plural, according to my pandit:—

"Among mankind, whoever would be an illustrious *Khattiya* he must be scrupulous in regard to the purity of his lineage; and he who is endowed with the attributes requisite for the pilgrimage of holiness, is supreme among *devas* and men."

"Descendants of WA'SETTHO! by the brāhman SAṆANKUMA'RO, this very *gāthā* has been most unquestionably sang, it has been advisedly rehearsed, fully intending what it expressed, not undesignedly. This is known to myself.

"Descendants of WA'SETTHO! I also assert the same thing.

"Thus spoke BHAGAWA'. The delighted WA'SETTHO and BHARADDWA'JO were exceedingly gratified at the discourse of BHAGAWA'.

"The conclusion of the *Agganyasutta* being the fourth (of the *Pāṭikawaggo*.)"

I now revert to the *Dhammappakāsaṇi Aṭṭhakathā*, on the *Paṭisambhidā*.

"From the gathering of the mighty cloud which precedes the destruction of the *kappo* to the extinction of the flame, forms one *Asankheyyan*, called the *Sanwaṭṭe* (destruction.)

"From the extinction of the fire that destroyed the *kappo* to the deluge that submerged the hundred thousand *kōṭiyo* of *Chakkawālāni*, is the second *Asankheyyan*, called the *Sanwaṭṭaṭṭhāhi* (continuance of destruction).

"From the great deluge to the appearance of the sun and moon is the third *Asankheyyan*, called the *Wiwatṭe* (creation).

"From the appearance of the sun and moon until the gathering of the mighty cloud that is to destroy the *kappo* again is the fourth *Asankheyyan*, called the *Wiwatṭaṭṭhāhi*, (the continuance of the creation.)

"These *Asankheyyani* constitute one *mahā-kappo*, and be it understood that such is the destruction by fire, and reproduction.

"At any period when the *kappo* perishes by water, it is said, as explained in the former instance in detail, 'that a mighty destroying cloud having gathered, &c.' this much however is different.

"In lieu of the two suns (that appear) in that (destruction) a mighty torrent descends, producing a merciless deluge, destructive of the *kappo*. Commencing with a slight drift, by degrees the deluge descends in large streams, submerging a hundred thousand *kōṭiyo* of *Chakkawālāni*. The earth, together with its mountains &c. melt away, wherever it is rained upon by this fierce deluge.

"That body of water is pent up on all sides, by the power of the wind (and prevented spreading to the other *Chakkawālāni*). From the earth to the regions of the second *jhāna* the flood extends. Thereby three *Brahmalōkā* being destroyed, it ceases to rise, on reaching the *Subhakinno-brahmalōko*. As long as the most trifling perishable thing is left, so long is there no intermission to the rise of the flood. But when every perishable thing destined to be overwhelmed in water has been destroyed, instantly (the flood) subsides, and is entirely dissipated. The vacuum below meeting the vacuum above (by the intermediate *Chakkawālāni*, having been dissipated by the flood) one universal darkness is produced. All the rest has been described (in the destruction by fire). In this place, therefore, it need only be, in general terms, mentioned, that the world is recreated, commencing with the *Abhassaro-brahmalōko*; and that after death in the *Subhakinno-brahmalōko*, living creatures are born again in the *Abhassaro-brahmalōko*, and other regions.

अथनेहा जने तस्मिन् वे ज्ञेयप्रतिपत्तिः विद्याचरणं संपन्नः स वेदो देव मायुषे ॥

"Among such people, those are superior kshatris, who follow (the conduct of) their ancestry: but he, who is perfected in wisdom's path, is most excellent among gods and men.—Ed.

"From the gathering of the destroying cloud to the termination of the fierce deluge that destroyed the *kappo* constitutes one *Asankheyyan*.

"From the termination of the deluge to the rains that reproduced the world, is the second *Asankheyyan*.

"From the great rains that reproduced the earth to the appearance of the sun and moon is the third *Asankheyyan*.

"From the reappearance of the sun and moon to the gathering again of the cloud of destruction is the fourth *Asankheyyan*.

"These four *Asankheyyani* constitute a *mahā-kappo*, and be it understood, such is the destruction by water, and the reproduction.

"Whenever the *kappo* is destroyed by the wind, be it known, that, as already explained in the other cases in detail, the mighty destroying cloud gathers. The difference in this instance also occurs at the stage in which the two suns appear, as in those instances, thus here the storm destined to destroy the *kappo* then rises.

"In the first place, it raises a dust; then it drives before it by degrees a still heavier dust; then light sand, heavy sand, pebbles, and so on, till it hurls on rocks as large as houses. In the same manner it tears up great trees. All these ones raised from the earth never descend again, being converted into impalpable atoms, they are completely absorbed.

"Then, in due course, the wind under the earth rising and spinning the world topsy turvy, hurls it into the air. Portions of the world being one hundred *yōjanā*, two, three, four and five hundred *yōjanā* in extent, are rent asunder, and tossed about by the power of the wind, till reduced to the minutest particles, they also become absorbed. The tempest then raising also aloft the *Chakkavāḍan* and *Mahāmāru* mountain, tosses them likewise into the air. They, hurled against each other, and battered to minute atoms, also vanish. By this means destroying, as well the habitations of the earth and the habitations (of the *dévas*) of the skies, as the six *Kannavāchara-dēvāloka*; the tempest annihilates the hundred thousand *kōṭiyo* of *Chakkavāḍani* also. One *Chakkavāḍan* being dashed against another *Chakkavāḍan*, one *Himavanto* (snowy region) against another, and one *Māru* mountain against another; and being involved in a general chaos, and reduced to minute atoms, all perish.

"The storm extends from the earth to the regions of the third *jhāna* and three *Brāhmaloka* having been involved in that destruction, the tempest is arrested on reaching the *Whepphalo-brāhmaloka*.

"Thus every perishable thing having perished (the tempest) itself perishes also. As described (in the other accounts of the destructions of the world) every circumstance takes place in this also, commencing with, by the vacuum below (the world being destroyed) meeting the vacuum above; and one universal darkness prevails.

"Subsequently the world is reproduced, commencing with the *Subhakinne-brāhmaloka*, and living creatures dying (in due course) in *Whepphalo-brāhmaloka*, are reproduced in the *Subhakinno* and other regions.

"In this instance, the period from the gathering of the cloud of destruction, to the rising of the tempest that destroys the *kappo*, is one *Asankheyyan*.

"From the period of the tempest, to the mighty deluge of reproduction, is the second *Asankheyyan*, and so forth, in the same subdivisions, the other two *Asankheyyāni*. These four *Asankheyyāni* constitute a *mahā-kappo*. Be it understood, that such is the nature of the destruction by storm.

"Why is it that the world is destroyed? On account of the original impiety committed. The world is destroyed on account of the commission of the following sins, viz: on the ascendancy of the passions, it (the world) is destroyed by water: some authorities, however, declare that on the prevalence of crimes, the destruction is by fire, and on the ascendancy of the passions by water. And when ignorance prevails, it perishes by the wind.

"It is elsewhere explained that after the world has been destroyed by fire seven times, it is once destroyed by water, and after eight destructions by water (seven conflagrations having intervened between each of the deluges making sixty-four destructions) it is once destroyed by wind. From this explanation, when sixty-three *kappá* have been destroyed, the rotation should arrive for one destruction by water, but the storm-destruction superceding it (the water-destruction), in the age of the sixty-fourth *kappo*, destroys the worlds including the *Subhāṣṇa-brahmalóko*."

[To be continued.]

IV.—*Report on the Coal discovered in the Tenasserim provinces, by Dr. HELFER, dated Mergui, 23rd May, 1838.*

1. Five localities of coal have hitherto been discovered in the *Tenasserim* provinces all situated in the province of *Mergui*.

A. On the large *Tenasserim* river, nine days up from the village of *Tenasserim* near the creek *Nun-their-Khiaung*, one and a quarter mile inland; species friable, brown coal intermixed with iron pyrites. Three veins in different localities, tertiary sandstone below, compact sandstone conglomerate interspersed with large silicious fragments above.—*Discovered 17th March, 1838.*

B. On the large *Tenasserim* eight days distant from the village of *Tenasserim* along the banks of the river. Species lignite, light slaty brown coal in veins 3 to 4 inches thick in general, sometimes not more than 2 or 3 lines; formation tertiary sandstone above and below; belonging to the same system as No. 1.—*Discovered 19th March, 1838.*

C. On the *Tenasserim* above the *Tarouk Khiaung*, on the right or eastern side of the river five days distant from the village of *Tenasserim*. Species bituminous shale in large masses protruding above the surface, apparently a distinct system from A or B.—*Discovered 24th March, 1838.*

D. On the coal river a branch of the little *Tenasserim*, five days above the village of *Tenasserim* in a south-east direction; slaty coal sp. gr. 1.26. A vein 6 feet thick, 240 long with an angle of 20 degrees upwards. A section on the banks of the river. Formation above grey, below black clay slate; the lowest stratum to judge from the geological features of the country, apparently resting upon blue limestone.

E. One hour distant from No. 4 or (D) and a continuation of it; an immense coal field of either slaty or conchoidal pitch coal, highly bituminous without a concomitant of iron pyrites. A succession of fourteen localities where the coal lies bare on clay on both sides of the river, which has evidently forced its way through it; running at an angle of 25 degrees upwards; in all places 6 feet or more thick, resting upon a stratum of slate.—*D and E discovered 24th April, 1838.*

2. This last locality being by far the most preferable respecting

quantity, quality and locality, I refrain from entering into details of A, B and C, which probably will never be worked, and are only interesting in a scientific point of view.

3. This extensive coal field distant from A, B, C more than 300 miles belongs to quite a different system. It is situated on a high level table-land, only diversified by an isolated range of mountains, from which the river issues which passes through the coal fields, and which ridge may be considered as the eastern boundary of the British possessions towards *Siam*. The gulf of *Siam* in a direct line seems only to be 45 miles distant. The *Lazchin* islands lie almost opposite.

4. The river originating in the neighbouring mountains is at the coal field only 15-25 yards broad, part of the year nearly dry, but during five months from June to November (both inclusive) according to native reports it is uninterruptedly navigable for rafts. I ascended it in the month of April on rafts, before the commencement of the monsoon, as far as within three hours distance from the coal fields.

5. The river after having passed through the last table-land enters a hilly country, winding through the mountains chiefly in a northwest direction until it reaches another river coming from the south. Here the influence of the tides begins to be perceptible; it runs in the same direction about 40 miles having attained a breadth of from 50 to 80 yards at low water and enters at the village of *Tenasserim*. The large *Tenasserim* river is accessible there to vessels of 100 tons burthen, from whence the final distance to *Mergui* is about 50 miles*.

6. The coal itself is of superior quality being that species known in England under the name of pitch coal, much higher in price than common coal, and, on account of the greater quantity of bitumen which it contains, used for the generation of gas.

7. The quantity seems to be unlimited, taking into consideration only the upper stratum of six feet thickness as far as I was able to trace it on the surface. Allowing annually to be required 30,000 tons, this upper stratum alone would supply that large quantity for the period of 120 years with good coal.

8. But it is certain that other strata lie below, and that probably the quantity still improves in the ratio as the depth increases, according to analogy†.

* N. B. The natives from *Mergui* and different parts of *Siam*, go annually into the mountains above the coal fields to cut an aromatic wood called *callame* which is an article of commerce for the markets of *Rangoon* and *Bangkok*.

† N. B. The specimens which accompany this memorandum must, though very good coal, not be considered the best in quality; they are taken from the surface and had been exposed for a lapse of ages to the constant action of water and incessant influence of the atmosphere.

8. The discovery of this coal field seems to be very important at the present moment when steam communication begins to spread over the whole of the eastern seas, and when the demand for coal annually increases.

9. It is not certain if the locality can compete with the coal market in *Calcutta*, but *Mergui* seems to be destined in future to supply this coast, the Straits, the Chinese seas, *Madras*, *Ceylon*, and perhaps *Bombay* and the *Red Sea*, with coal.

10. If *Ceylon* become the central point in the comprehensive system of steam communication, the locality of *Mergui* seems particularly adapted to supply the depôts at *Point de Galle*, the distance being in the favorable season only eight or ten days' sail.

11. A great advantage in the locality is the total absence of land transport. The coal fields are divided quasi on purpose by nature by the river, and the pits can be opened twenty yards from the banks of the river.

12. The distance by the river is about 120 miles from *Mergui*; sixty miles of this are accessible to vessels of 100 tons burthen throughout the year, and 40 miles more are under the influence of the tides. The difficulty of the navigation concentrates in the last 20 miles. The passage is obstructed by hundreds of uprooted trees lying across, impeding the navigation and giving constant occasion to the formation of sand banks.

The clearing of this part of the river from these impediments will be expensive, but a great deal can be done without any particular expense, if Government convicts are employed.

13. The last thirty miles are navigable only during five months of the year: it is therefore necessary to have a depôt of coal near the river banks, ready to be shipped, when the water begins to rise.

14. Bamboo rafts, each holding one ton of coal, are the best means of transport in the first instance; tall bamboos fit for the purpose are on the spot in the greatest abundance.

15. Bamboos fetch always the price of one rupee eight annas, to two rupees per hundred at *Mergui*. The rafts can therefore be sold with advantage. Should vessels arrive from distant parts, then the bamboos would rise in price, the superior quality of those growing in these provinces being appreciated on the other side of India, the vessels will be glad to find another article to take along with the coal.

16. If however annually, a very large quantity say, 10 to 20,000 tons are required, bamboos will not be sufficient, and it will be necessary

to establish saw-mills in the place, to construct wooden boxes of planks, to float the fuel down in them.

17. If wood of a superior quality is selected (and there is no want of excellent timber throughout the province), the expense of the saw-mills driven by water will be covered by selling the planks at a moderate price in *Mergui*, even with profit.

18 A dépôt should be established at *Mergui*, in a commodious place; so that vessels can easily approach the shore.

19. If large quantities of coal are exported from *Mergui*; particular coal transports ought to be constructed, able to contain 5 to 800 tons each.

20. The stratum above the coal is no where more than 25 feet thick, and consists of *a*, bad slaty coal, 6 inches; *b*, grey slate, 8 inches; *c*, debris of slate with coarse gravel, 2 feet; *d*, gravel, and the rest alluvium.

21. Consequently no complicated mining operation is required. The upper strata being removed, the coal may be extracted without any farther difficulty.

22. Being an open day work no casualties are to be feared from the generation of the fatal bihydroguret of carbon (firedamp).

23. The great expenses accompanying the removal of the accumulated waters in deep coal mines are avoided.

24. Nothing is required but a shed above and a rampart round the coal pits to prevent the intrusion of the rain during the monsoon.

25. In the subsequent calculation it will be seen, that the greatest expense is incurred by the floating down of the rafts; being of the opinion that only Burmese are able to manage the rafts upon the river, the convicts being incumbered with irons and inexperienced on the water. It is the enormous price of labour, ten rupees at least per month, which renders the transport so expensive; suppose the price of labour to be five rupees instead of ten, then according to the calculation which follows—the price would immediately fall from four and a quarter annas per maund to two and a half annas per maund.

26. Labourers from India could be advantageously employed in working this coal field.

27. Being occupied only during the monsoon with the floating down of the coal, they could be employed during the rest of the time, part of them constructing new rafts for the next season, part of them with the cultivation of the paddy, for themselves and for the consumption of the convicts in the coal.

29. The benefits in working the coal mines of these provinces are too obvious to merit a particular panegyric; they are in short as follows:

1. The discovery of a superior quality of coal in an unlimited quantity, in an accessible locality will remove every obstacle to steam communication along the whole of the eastern coast of Bengal.

2. It will render the inexhaustible supply of superior iron ore a treasure to the provinces, and will lead to the supply of iron for the whole of India from this coast.

3. It will be an inducement to work the tin mines.

4. It will give employment to several hundred convicts in a profitable way to government.

5. The circulation of a capital of 60,000 rupees ad minimum per annum which remains in the country will render the inhabitants the more rich, the provinces the more prosperous.

6. In consequence of this, foreign capital will be drawn into the country ;—the increase of capital will increase the population ;—the increase of population will increase the cultivation ;—the increase of population and cultivation will augment the public revenue.

Report on the Mergui Coal.

The first supply of coal from Dr. HELFER, upon which I reported unfavorably I now perceive to have consisted merely of A, B, and C, of the forgoing report, the precursors only of the Doctor's real discovery, and as he himself expresses it, only valuable in a scientific point of view.

The four baskets now received are indeed of a far different quality and fully justify the enthusiastic anticipations their discovery has raised. Not being distinguished by any mark I presume they are all from the localities D and E, which may be regarded as connected together, though differing somewhat in quality.

This deposit seems to consist entirely of that species of coal called pitch coal, or cannel coal. It resembles in many respects the most resinous of the coals of the *Assam* field, but the ligneous structure is generally less evident, and the fracture more conchoidal. In many fragments however the laminary texture is observable, and the usual variations in the quality of the layers of carbonized matter mark the mode of deposit, some layers having more earthy matter, some more carbonaceous, and some more bituminous ; and occasionally a thin film of ferruginous or earthy matter intervening.

The *Mergui* coal is however in general very homogeneous, as the annexed analysis of four specimens taken from different bags will show. It should be remarked that these specimens are each averages, part being taken from the best and part from the worst looking of each parcel.

The very large proportion of volatile matter, near 50 per cent. shews this coal to be a superior blazing material, which is the main point in getting up steam, so much so that I understand one of the Company's steamers is unable to get up steam with the *Burdwan* coal without a large admixture of English cannel coal. It also makes it an admirable coal for generating gas.

To try this latter experimentally I distilled over the gas from 18 tolas of the *Mergui* coal, and in a few minutes obtained two gasometers full, or by weight nearly three and a quarter tolas of gas, besides 4.3 tolas* of thick brown naphtha and water, a third part of which would have been converted into gas had it passed through a heated tube.

When used in the forge the clear copious blaze is rather objectionable; it wastes the heat, and more coal is consequently expended; but a very good weld was effected with it in presence of Captain FORBES.

In the same manner the great loss of volatile matter makes it unprofitable for coking (yielding only one half instead of three fourths its weight), but the coke itself is very close and good, being as free from earthy impurity as much of the English coal.

All other particulars may be learnt by comparing the analysis with that of other coals in my printed table: (see p. 197 of the present vol.

(Signed) J. PRINSEP,
Assay Master.

22nd June, 1838.

Analysis of the three first specimens of Lignite sent by Dr. HÄLFER, from Mergui.

| | No. 1. A.
Burned with small
flame and copious
scintillations. | No. 2. B.
Burned with fewer
scintillations and
poor flame. | No. 3. C.
Burned with a few
scintillations and
poor flame. |
|-------------------------------------|--|---|---|
| Specific gravity, | 1.256 | 1.376 | 1.391 |
| Water, | 10.0 | 9.3 | 7.3 |
| Volatile matter, | 56.7 | 53.9 | 38.6 |
| Carbon, | 36.0 | 37.3 | 43.6 |
| Ferruginous, & earthy matter, | 7.3 | 8.8 | 17.6 |
| | 100.0 | 100.0 | 100.0 |

Second despatch D. and E.—Pitch coal from Mergui.

All four burned with copious rich flame; coke close-grained and of highly metallic lustre.

| | No. 1. | No. 2. | No. 3. | No. 4. |
|---|--------|--------|--------|--------|
| Water, | 9.7 | 8.3 | 7.4 | 7.6 |
| Specific gravity, | 1.273 | 1.280 | 1.245 | 1.251 |
| Volatile matter, | 45.0 | 48.9 | 48.3 | 48.3 |
| Carbon, | 50.3 | 46.7 | 45.1 | 48.7 |
| Earthy matter, slightly
ferruginous, | 4.7 | 4.4 | 6.6 | 3.1 |
| | 100.0 | 100.0 | 100.0 | 100.0 |

J. PRINSEP.

Calcutta, the 22nd June, 1838.

* It consisted of one tola of Naphtha 3.3 of aqueous liquid containing sulphate and carbonate of ammonia, and pyroligneous acid.

V.—*Comparison of Asiatic Languages.*

We are indebted to the Editors of the *Calcutta Christian Observer* for the following columns of Chinese and Japanese words corresponding to those contained in the tabular view of the comparison of Eastern languages in our No. for December last, and present it with satisfaction to our readers.

There were two other columns in Mr. W.'s communication, containing the sixty words in the several characters; viz. the *Kátákáná* and *Hirákáná*, which the want of type for their exhibition has obliged us to exclude. We are however through Mr. CSOMA's kindness enabled to insert the column of Tibetan equivalents.

To the Editors of the *Calcutta Christian Observer*.

DEAR SIRs,

Having been favoured with the perusal of the number of the J. A. S. for December 1837, I have looked over the article on a comparison of various Asiatic Languages with much interest. The plan if carried out, will be likely to afford data from which important and interesting inferences can be legitimately drawn.

In the column for Japanese, however, I think you will be a little misled by your authority not attending very strictly to the rules of pronunciation and spelling which you have laid down, and I have ventured to send a column of the words, in order that a comparison may be made from the true sounds of the Japanese, accompanied by two modes of writing most in use. The vowel sounds to the letters of their alphabet are quite uniform; but by elision for the sake of euphony, the number of vowel sounds is greatly increased. I should think that few Asiatic languages could be more perfectly reduced to the Romanizing system than the Japanese, and that there were few people in Asia who would be less inclined to adopt that system than that people.

When Mr. G. says, "that the Chinese character is universally read among the natives with a different sound and accent, more full and euphonical," he perhaps wishes to express that the Chinese character is used among the Japanese to a considerable extent, but that the people do so universally there are not sufficient grounds for believing. There are in the alphabet, 73 distinct sounds, 25 of which are made by diacritical marks upon some of the 48 letters. In the *Hirákáná*, there are several ways of writing the same character or letter, making consequently, their number much greater, perhaps above a hundred. In the *I'mátokáná* (not *Imatakana*) the contractions are carried to a greater extent, making it one of the most difficult writings in existence to read freely.

| English. | Tibetan. | Japanese. | Chinese Characters. | |
|-----------------------|---------------------|------------|---------------------|--------|
| Night, | m, tshan mo, | yoró, | yèy, | 夜 * 43 |
| Oil, | h, bru mar, | ábura, | yáu, | 油 44 |
| Plantain, kála, Hind, | ཤེ་ལ | báahiyo, | tsáu, | 蕉 * 45 |
| River, | g, tsang po, | káwá, | kiáng, | 江 46 |
| Road, | lam, | míchi, | lú, | 路 47 |
| Salt, | teha, | shiwo, | yen, | 塩 48 |
| Skin, | paḡ pa, | káwá, | pí, | 皮 49 |
| Sky, | nam m, khab, | sorá, | tsáng
tíen, | 蒼天 50 |
| Snake, | s, brul, | hebi, | ahè, | 蛇 51 |
| Star, | akar ma, | hoshi, | sing, | 星 52 |
| Stone, | r, do, | ishi, | sheh, | 石 * 53 |
| Sun, | nyi ma, | níchirin, | yih, | 日 54 |
| Tiger, | s, tag, | torá, | fú, | 虎 55 |
| Tooth, | so, | há, | yá, | 牙 * 56 |
| Tree, | ljon shing, | ki, | shu, | 樹 57 |
| Village, | shing,
yul tsho, | múra, | hiáng, | 鄉 58 |
| Water, | chhu, | midzá, | shui, | 水 59 |
| Yam, | dova, | tskúneimo, | tá shú, | 大薯 60 |

The sounds of the Chinese are written in accordance with the system published in the Chinese Repository, for February, 1838, and the Japanese after the list of sounds on pages 83, and 101 of the select papers on Romanizing published at Serampore. The last *i* is short in the Japanese words, like *y* in beauty. The difference between the two kinds of writing is shewn by the two columns of Kátákáná and Hirákáná; the Imáttokáná is much like the Hirákáná. The Japanese employ Chinese characters to express the same ideas as the Chinese, but often call them by a different name. Those marked * were probably derived from a common source, and perhaps there are more. The Chinese sound is often known among the Japanese, but does not seem to be the one most commonly used.

VI.—*Epitome of the Grammars of the Brahuiky, the Balochky and the Panjābi languages, with Vocabularies of the Baraky, the Pashi, the Laghmani, the Cashgari, the Teerhai, and the Deer Dialects.* By *Lieut. R. LEECH, Bombay Engineers, Assistant on a Mission to Kābul.*

GRAMMAR OF THE PANJĀBI LANGUAGE.

This language, as spoken in large towns, is a dialect of the Urdu or Hindustani, and differs from it chiefly in having those vowels short that the latter has long, and in having the Sanskrit (:) visarg in the middle of words otherwise Hindustani; for example the number eighteen they call attāhrān and not athārā. In the villages the zemindars (farmers) speak a language called Jathky, the original language of the country. On the Sikh frontiers Panjābī slightly mixes with the neighbouring dialects, in *Shawalpoor* it partakes of Sindhy. There are two characters in which the language is written; Gúrmukhī the character of the Granth, (gospels of 10 holy men,) and Lande used by the merchants in their accounts. The character used in the mountains of *Jammā* and *Nadoun* differs from the Lande of the capital, and the merchants even of different cities and districts, as *Seálkot* and *Guzerat* for instance differ slightly in their manner of writing this character.

The Sikhs under their preceptor Gurū GOVIND SINGH carried their hatred of the Muhammadans to such an extent as to substitute a vocabulary for their native Punjābī, because the latter was spoken by the Mussalmans. The vocabulary is composed of ridiculous and disrespectful epithets of every thing relating to Islamism: it is not however used by Mahārājāh RUNJEE SINGH the ruler of the Sikh nation.

Declension of a Noun Masculine.

| | Singular. | | Plural. | |
|-------------|-----------|--------------|------------|-------------|
| Nom. | Ghōḍā | a horse | Ghōḍe | horses |
| Gen. | Ghōḍedā | of a horse | Ghōḍyāṇḍā | of horses |
| Acc. & Dat. | Ghōḍenū | a horse | Ghōḍyānū | horses |
| Abi. | Ghōḍeton | from a horse | Ghōḍyānton | from horses |

Declension of a Noun Feminine.

| | Singular. | | Plural. | |
|-------------|-----------|-------------|-------------|------------|
| Nom. | Ghōḍī | a mare | Ghōḍiyāṇ | mares |
| Gen. | Ghōḍīdā | of a mare | Ghōḍiyāṇḍā | of mares |
| Acc. & Dat. | Ghōḍīnū | a mare | Ghōḍiyānū | to mares |
| Abi. | Ghōḍīton | from a mare | Ghōḍiyānton | from mares |

Declension of a Compound Noun.

| | Singular. | | Plural. | |
|------|---------------|-----------------|-------------------|----------------|
| Nom. | Hachā ghōḍā | a good horse | Hache ghōḍe | good horses |
| Gen. | Hache ghōḍedā | of a good horse | Hachyāṇ ghōḍyāṇḍā | of good horses |

Acc. & Dat. Hache ghoḍenū a good horse Hachyān good horses

Abl. Hache ghoḍeton from a good Hachyān gho- from good
horse dyānton horses

This termination is changed into dī to agree with a feminine noun.

Declension of the 1st Personal Pronoun.

| | <i>Singular.</i> | | <i>Plural.</i> | |
|------------------------|-------------------------------------|-------------------------------|----------------------------------|--------------------|
| <i>Nom.</i> | Main or mān | I | Asi | we (Jathkī) |
| <i>Gen.</i> | Medā or mendā | my | Asāḍā sādā | our |
| <i>Acc. & Dat.</i> | Menū or mainkū | me | Asānū sānū | us |
| <i>Abl.</i> | Medekulon
Medethon
Mede pāson | from me
from me
from me | Asāthon sāthon
sāthī nasāthīn | from us
from us |

Declension of the 2nd Personal Pronoun.

| | <i>Singular.</i> | | <i>Plural.</i> | |
|------------------------|-------------------------|-----------|-------------------------|----------|
| <i>Nom.</i> | Tūn | thou | Tusi ortusān | you |
| <i>Gen.</i> | Tedā, tendā
or tondā | thy | Tuhādā or
tusādā | your |
| <i>Acc. & Dat.</i> | Tenū or tunnū | thee | Tuhānnū or
tusānnū | you |
| <i>Abl.</i> | Tethon or
tuthon | from thee | Tuhāthon or
tusāthon | from you |

Declension of the 3rd Personal Pronoun, (proximate.)

| | <i>Singular.</i> | | <i>Plural.</i> | |
|------------------------|------------------|-----------|--------------------------|------------|
| <i>Nom.</i> | E | this | E | these |
| <i>Gen.</i> | Isdā | of this | Inhāndā | of these |
| <i>Acc. & Dat.</i> | Ienū | this | Inhānū | these |
| <i>Abl.</i> | Iekulon, iethon | from this | Inhā kulon
Inhā pāson | from these |

Declension of the 3rd Personal Pronoun, (remote.)

| <i>Nom.</i> | O | that | O | those |
|------------------------|--------|-----------|------------------------------------|------------|
| <i>Gen.</i> | Usdā | of that | Onhāndā | of those |
| <i>Acc. & Dat.</i> | Usnū | that | Onhanū or
onhānū | those |
| <i>Abl.</i> | Usthon | from that | Onākulon
Onhāthon
Onhā pāson | from those |

Declension of the Reflective Pronoun.

| | | |
|------------------------|---------|-----------|
| <i>Nom.</i> | A'pe | self |
| <i>Gen.</i> | A'pnā | of self |
| <i>Acc. & Dat.</i> | A'pnū | to self |
| <i>Abl.</i> | A'pthon | from self |

Declension of the Interrogative Pronoun, (animate.)

| | | |
|------------------------|---------------|-----------|
| <i>Nom.</i> | Kouna | who |
| <i>Gen.</i> | Kisdā | whose |
| <i>Acc. & Dat.</i> | Kisnū or kànū | from whom |
| <i>Abl.</i> | Kiathon | |

Declension of the Interrogative Pronoun, (inanimate.)

| | | |
|-------------|---------------|---------|
| <i>Nom.</i> | Kyā or kī | what |
| <i>Gen.</i> | Kisdā or kādā | of what |

Acc. & Dat.
Abt.

Kisnū or kànū
Kisthō or kaithō

what
from what

Cardinal Numbers.

| | | | |
|--------------|-------------|---------------|------------|
| One | hik | Fifty-three | tirwanjā |
| Two | do | Fifty-four | chauranjā |
| Three | tin | Fifty-five | pachwanjā |
| Four | chār | Fifty-six | chawanjā |
| Five | pañj | Fifty-seven | satwanjā |
| Six | chhih | Fifty-eight | atwanjā |
| Seven | sat | Fifty-nine | unhāt |
| Eight | ath | Sixty | sat |
| Nine | nouṃ | Sixty-one | ekhāt |
| Ten | das | Sixty-two | bāhāt |
| Eleven | nyānrāṃ | Sixty-three | tehat |
| Twelve | bāhrāṃ | Sixty-four | chaut |
| Thirteen | tehrāṃ | Sixty-five | pepant |
| Fourteen | chandāṃ | Sixty-six | chahāt |
| Fifteen | pundhrāṃ | Sixty-seven | satāt |
| Sixteen | sohlāṃ | Sixty-eight | attāt |
| Seventeen | sattāhrāṃ | Sixty-nine | unhattar |
| Eighteen | attāhrāṃ | Seventy | satar |
| Nineteen | unnāṃ | Seventy-one | ekhatar |
| Twenty | wih | Seventy-two | bāhatar |
| Twenty-one | ikkī | Seventy-three | tehatar |
| Twenty-two | bāi | Seventy-four | chauhattar |
| Twenty-three | te,ī | Seventy-five | pañjhatar |
| Twenty-four | chavī | Seventy-six | chuhattar |
| Twenty-five | pañji | Seventy-seven | sathattar |
| Twenty-six | chhabī | Seventy-eight | athattar |
| Twenty-seven | satāi | Seventy-nine | unāsi |
| Twenty-eight | attāi | Eighty | asi |
| Twenty-nine | unnatti | Eighty-one | ekāsi |
| Thirty | tih or trīh | Eighty-two | beāsi |
| Thirty-one | ekati | Eighty-three | treāsi |
| Thirty-two | batti | Eighty-four | chaurāsi |
| Thirty-three | teṭi | Eighty-five | pachāsi |
| Thirty-four | chauti | Eighty-six | cha,āsi |
| Thirty-five | painti | Eighty-seven | satāsi |
| Thirty-six | chatti | Eighty-eight | attāsi |
| Thirty-seven | sainti | Eighty-nine | unānawe |
| Thirty-eight | attainti | Ninety | nave |
| Thirty-nine | untālī | Ninety-one | ekānave |
| Forty | chāhli | Ninety-two | bānave |
| Forty-one | ektālī | Ninety-three | teānave |
| Forty-two | baitālī | Ninety-four | chaurānave |
| Forty-three | tirtālī | Ninety-five | pachānave |
| Forty-four | chautālī | Ninety-six | chaānave |
| Forty-five | paintālī | Ninety-seven | satānave |
| Forty-six | chatālī | Ninety-eight | atānave |
| Forty-seven | seṇtālī | Ninety-nine | nadinave |
| Forty-eight | att,tālī | Hundred | sou senkda |
| Forty-nine | unwanjā | Thousand | hazār |
| Fifty | pañjāh | Hundred thou- | lakh |
| Fifty-one | ekwanjā | sand | |
| Fifty-two | bawanjā | Million | karōḍ |

Ordinal Numbers.

| | | | |
|--------|--------------|---------|---------|
| First | pahlā | Sixth | chaywān |
| Second | dujjā, dusrā | Seventh | satwān |
| Third | tisrā, trijā | Eighth | atwān |
| Fourth | chauthā | Ninth | nāwān |
| Fifth | panjwān | Tenth | daswān |

CONJUGATION OF THE AUXILIARY VERB.

Indicative Mood. Present Tense.

| | | | |
|----------------|----------|---------------|----------|
| Main hān or ān | I am | Asi hān or ān | We are |
| Tūn hēn or ēn | Thou art | Tusi ho or o | You are |
| O hēn or ēn | He is | O hān or ān | They are |

Perfect Past Tense.

| | | | |
|--------------------|-----------|--------------------|-----------|
| Main haisān or sān | I was | Asi haisān or āhe | We were |
| Tūn haiseṅ or sāṅ | Thou wert | Tusi haisāo or āhe | You were |
| O haist si or āhā | He was | O haisiṅ or siṅ | They were |

Imperfect Past Tense.

| | | | |
|----------------|-----------------|------------------|-----------------|
| Main hundā sān | I was being | Asi hunde sān | We were being |
| Tūn hundā sāṅ | Thou wert being | Tusi hunde sā, o | You were being |
| O hundā si | He was being | O hunde sān | They were being |

Pluperfect Past Tense.

| | | | |
|---------------|-----------------|-----------------|---------------|
| Main hoyā sān | I had been | Asi hoye sān | We had been |
| Tūn hoyā sāṅ | Thou hadst been | Tusi hoye sā, o | You had been |
| O hoyā si | He had been | O hoye sān | They had been |

Future Tense.

| | | | |
|--------------|---------------|-------------|---------------|
| Main howangā | I shall be | Asi howānge | We shall be |
| Tūn howengā | Thou shalt be | Tusi hovoge | You shall be |
| O hevegā | He shall be | O ho ange | They shall be |

Imperative Mood.

| | | | |
|-------------|---------|-----------------|--------|
| Tūn ho or o | Be thou | Tusi hovo or vo | Be you |
|-------------|---------|-----------------|--------|

The negative imperative is formed by prefixing na.

Subjunctive Mood.

The relative conjunction (harf i shart of the Arabians) is expressed by je (if) and the correlative conjunction (harf i jaza) by tān then.

Present Tense.

| | | | |
|------------|---------------|------------|-------------|
| Main howān | I may be | Asi hoviye | We may be |
| Tūn hoveṅ | Thou mayst be | Tusi hovo | You may be |
| O hove | He may be | O howān | They may be |

Perfect Past Tense.

| | | | |
|---------------------|-----------------|------------|---------------|
| Main hundān | I had been | Asi hunde | We had been |
| Tūn hundon or hundā | Thou hadst been | Tusi hunde | You had been |
| O hundā | He had been | O hunde | They had been |

Past Participle. (Isam i mähfūl) hoyā been

Verbal Noun. (Isam i fāil) honewālā be, or

Infinitive Mood. (Masdar) honā to be

CONJUGATION OF THE VERB A'khnā, TO SPEAK.

(Masculine.)

Present Tense.

| | | | |
|------------|---------------|---------------|------------|
| Main ākhnā | I speak | Asi ākhnān | We speak |
| Tūn ākhuaṅ | Thou speakest | Tusā ākhde, o | You speak |
| O ākhdaī | He speaks | O ākhden | They speak |

Perfect Past Tense.

| | | | |
|------------|--------------|-------------|------------|
| Main ākhyā | I spoke | Asān ākhyā | We spoke |
| Tūn ākhyai | Thou spokest | Tusān ākhyā | You spoke |
| Us ākhyā | He spoke | Inā ākhyā | They spoke |

Imperfect Past Tense.

| | | | |
|---------------|--------------------|------------------|--------------------|
| Main ākhā sān | I was speaking | Asi ākhde sān | We were speaking |
| Tūn ākhā sān | Thou wast speaking | Tusi ākhde sā, o | You were speaking |
| O ākhā si | He was speaking | O ākhde sin | They were speaking |

Pluperfect Past Tense.

| | | | |
|---------------|-------------------|----------------|-----------------|
| Main ākhyā si | I had spoken | Asān ākhyā si | We had spoken |
| Tūn ākhyā si | Thou hadst spoken | Tusān ākhyā si | You had spoken |
| Us ākhyā si | He had spoken | Inā ākhyā si | They had spoken |

Future Tense.

| | | | |
|--------------|-----------------|-------------|-----------------|
| Main ākhangā | I will speak | Asi ākhānge | We will speak |
| Tūn ākhangā | Thou wilt speak | Tusi ākhoge | You will speak |
| O ākhegā | He will speak | O ākhānge | They will speak |

Imperative Mood.

| | | | |
|----------------|------------|-----------|-----------|
| Tūn ākh or akh | Speak thou | Tusi ākho | Speak you |
|----------------|------------|-----------|-----------|

Subjunctive Mood. Present Tense.

| | | | |
|------------|------------------|------------|----------------|
| Main ākhān | I may speak | Asi ākhiye | We may speak |
| Tūn ākheṅ | Thou mayst speak | Tusi ākho | You may speak |
| O ākhe | He may speak | O ākhān | They may speak |

Perfect Past Tense.

| | | | |
|-------------------|---------------------|------------|------------------|
| Main ākhā or ākhā | I might speak | Asi ākhde | We might speak |
| Tūn ākhdo | Thou mightest speak | Tusi ākhde | You might speak |
| O ākhā | He might speak | O ākhde | They might speak |

CONJUGATION OF THE VERB *Kehna*, To TELL.

(Feminine.)

Present Tense.

| | | | |
|--------------|------------------|----------------------------|------------------|
| Main kehū ān | I am telling | Asi kehni ān or kehndiyān | We are telling |
| Tūn kehū en | Thou art telling | Tusi kehndiyāno | You are telling |
| O kehndī e | She is telling | O kehndiyā en or kehndiyān | They are telling |

Perfect Past Tense.

| | | | |
|-------------|-------------|--------------|-----------|
| Main ke, ai | I told | Asān keai | We told |
| Tūn keai | Thou toldst | Tusān ke, ai | You told |
| Usne keai | She told | Unā keai | They told |

Imperfect Past Tense.

| | | | |
|-----------------|-------------------|----------------------|-------------------|
| Main kehndī sān | I was telling | Asi kehndiyān sān | We were telling |
| Tūn kehndī sān | Thou wast telling | Tusi kehndiyān sā, o | You were telling |
| O kehndī si | She was telling | O kehndiyān sin | They were telling |

Pluperfect Past Tense.

| | | | |
|--------------|-----------------|---------------|---------------|
| Main kehà sî | I had told | Asàn kehà sî | We had told |
| Tùñ kehà sî | Thou hadst told | Tusàn kehà sî | You had told |
| Us kehà sî | She had told | Unà kehà sî | They had told |

Future Tense.

| | | | |
|--------------|----------------|-----------------|----------------|
| Main kahangi | I will tell | Asi kahanginyàn | We will tell |
| Tùñ kahangi | Thou wilt tell | Tusi kahogiyò | You will tell |
| O kahegi | She will tell | O kahanginyàn | They will tell |

Imperative Mood.

| | | | |
|---------|-----------|-----------|----------|
| Tùñ koh | Tell thou | Tusi koho | Tell you |
|---------|-----------|-----------|----------|

Subjunctive Mood. Present Tense.

| | | | |
|------------|------------------|------------|---------------|
| Main kahàn | I may tell | Asi kahyye | We may tell |
| Tùñ kahèn | Thou mayest tell | Tusi kaho | You may tell |
| O kahe | She may tell | O kehan | They may tell |

Perfect Past Tense.

| | | | |
|--------------|--------------------|---------------|-----------------|
| Main kehandi | I might tell | Asi kehndiyàn | We might tell |
| Tùñ kehandi | Thou mightest tell | Tusi kehndiyò | You might tell |
| O kehndi | She might tell | O kehndiyàn | They might tell |

Vocabulary of Adverbs, Past and Prepositions, Conjunctions, &c. &c., called in Sanskrit (Aavyay).

| | | | |
|----------|-------------------|-----------------|----------------|
| Uppurr | } above | Attarsùn | 3 days hence |
| Uthe | | Chauth | 4 days hence |
| Heth | below | Panjauth | 5 days hence |
| Wich | in | Uchhà | above, high |
| Bàhar | out | Ninwàn | below, low |
| Idhir | here | Todi | } up to, 'till |
| Udhur | there | Lag | |
| Is wal | on this side | Tàin | |
| Us pàsse | on that side | Talak | |
| Agge | before | Par | but |
| Pichhe | after | Har wele hames- | always, at all |
| Sajje | to the right | hàn | times |
| Khabbe | to the left | Kadon | when |
| Jhabbe | quickly | Jad | } when |
| Hauli | slowly | Jadon | |
| Therhrki | slowly | Tad | } then |
| Dàdhi | fast | Tadon | |
| Halkà | light | Dihàde dihàde | daily |
| Bhàrà | heavy | Pher | again |
| Màdà | bad | Agle wele | formerly |
| Dàdhà | good | Hùna | now |
| Lissà | thin | Thàn | instead of |
| Mothà | fat | Pàr | across |
| Takdà | strong | Oràr | on this side |
| Wall | well | Uchhàn | on the top |
| Nàwal | ill | Niwàn | at the bottom |
| Waddà | large | Uttàd | a little high |
| Chotà | small | Niwàn | a little below |
| Lammà | long | Azpàs | round |
| Chaudà | broad | Sàmhe | in front |
| Aj | to-day | Bas | enough |
| Kul | yesterday | Bhi | also |
| Kal | to-morrow | Aho, hàn | yes, bhala |
| Parsùn | day after to-mor- | Nàh | no |
| | row | Je | if |

| | | | |
|----------------|--------------|------------|----------------------|
| Jiwenke | (chunānchy) | Jedā | as large as |
| Aiwenke | (chunin) | Edā | so large |
| Jadh | whenever | O, e | holla |
| Tadh | then | E miyān | the same in re- |
| Barabbar | } like | | spect |
| Wāngar | | U | } oh! for a woman |
| Mech | like in size | Ve | } to call |
| Kikar | why | U, i | oh! (pain) |
| Waste | } for | Hai, hai | alas |
| La, i | | Hāloe | } calling for help |
| Wadhik, bohūn, | | Pāhryā | |
| bahut | } much | O, e, o, e | oh for a slight pain |
| Wadh, botā | | Nāl | } in company with |
| Thora | little | Kol | |
| Ghat | less | Te | and |
| Ainwen | gratis | Binā | without |
| Kulon | than | Bhāven | or |

Vocabulary of Nouns.

| | | | |
|--------|---------------------|----------|-------------------|
| Din | day | Kothā | house or cottage |
| Rāt | night | Jhugā | hut |
| Hath | hand | Darakht | } tree |
| Mundā | } boy | Rukh | |
| Nikdā | | Būtā | shrub |
| Chokrā | | Būtī | plant |
| Nikkā | | Ghodā | horse |
| Kākā | | Tāirr | a tattoo mare |
| Ningar | } girl | Ghodī | } mare |
| Lauhdā | | Mādī | |
| Kūdi | | • Haran | } deer |
| Mundī | | Miryon | |
| Chokrī | | Mirg | } ass |
| Kākī | } son | Gaddon | |
| Nikkī | | Gaddān | |
| Nikdī | | Gadhā | |
| Lauhdī | | Kothā | |
| Putur | | Khachhar | mule |
| Betā | } daughter | Behān | a colt |
| Dhī | | Wacherā | foal |
| Kākī | | Sand | a barren female |
| Peo | | Supānk | a fruitful female |
| Bābā | | Tattū | a pony |
| Mā | } mother | Kukūḍ | a cock |
| Ammā | | Kukūḍī | a hen |
| Bhā, i | | Kabūtur | a pigeon |
| Bhirā | | Kuggī | a ring dove |
| Bhen | | Baghlā | } stork |
| Pāpī | sister | Baghlā | |
| Agg | water | Titur | partridge |
| Rotī | fire | Badhitar | a kind of ditto |
| Gogī | } bread | Batedā | quail |
| Tikkī | | Tiliyarr | a bird |
| Sheher | city, royal sent | Gidad | jackal |
| Pind | } village | Lūmbuḍ | fox |
| Thatā | | Bagyhād | wolf |
| Mohdā | a few huts | Sher | tiger |
| Girān | a town [pital | Babbar | royal tiger |
| Nagari | a large city or ca- | Chitā | leopard |
| Gharr | house | Shāgoash | panther |

| | | | |
|-------------------|--------------------------------|-------------|-------------------------|
| Tarkh | hyena | Mùlt | radish |
| Bijjù | an animal that
opens graves | Gàjar | carrot |
| Kuttà | dog | Kulfà | purslain |
| Billi | cat | Chaulàl | beet |
| Chuhà | rat | Làl sàg | red beet root |
| Sap | snake | Bohud | figus indicus |
| Neval | weazel | Ambh | mango |
| Mor | peacock | Anàr | pomegranate |
| Saggo | } lizard | Sandà phal | a fruit |
| Go | | Sangtarà | ditto |
| Sàna | a species of ditto | Kimb | ditto |
| Kachù | tortoise | Chakotrà | pampelnoes |
| Kummà | turtle | Kelà | plantain |
| Sepsar | alligator | Qulab | rose |
| Bhulan | the water hog | Lùn | salt |
| Ludhur | otter | Tel | oil |
| Uth, | } camel | Shakar | sugar |
| Unth | | Ràb | sirup |
| Riòh | bear | Khand | sugar, soft |
| Bàndar | monkey | Gùd | molasses |
| La gùr | long-tailed ape | Mishrì | sugar-candy |
| Bakrà, bakrì | } he-goat and she- | Patàsà | preparation of
sugar |
| Chhelà chheli | | Mirch | pepper |
| Bhedà bhed | goat | Lakaḍ | wood |
| Bhedù | sheep, ewe | Ghe, o, ghi | clarified butter |
| Dhagi | } ram | Makhan | butter |
| Gàn | | Anda | egg |
| Bald, dand, dhagà | cow | Ande | eggs |
| Manj | bullock | Dudh | milk |
| Sandà | she-buffalo | Dahin | } curds |
| Sand | he-buffalo | Chakkà | |
| Battak | bull | Lassi | } buttermilk |
| Kapak | duck | Kassà | |
| Chapwal | wheat | Panhak | } a cooking pot |
| Cholà | rice | Hàndi | |
| Càbuli chola | pulse | Kunni | } cover |
| Masar | white ditto | Tabli | |
| Mung | lentil | Chapni | wooden spoon |
| Mànha | phaseolus mungo | Do, l | cooking place |
| Rawàph | phaseolus maxi- | Chullà | iron spoon |
| Juàr | mus | Kadchi | frying pan |
| Makàl | a particular bean | Kadai | do. for bread |
| Janv | the common grain | Tavà | mortar |
| Matar | holcus soryum | Ukli | pestle |
| Bàjrà | Indian corn | Molà | saffron |
| Kangd | barley | Hardar | bedstead |
| Pyàs | a pea | Manji | small cot |
| Gandà | the common grain | Piḍi | cot of leather |
| Wassal | holcus spicatus | Kadtad | thongs |
| Thomb | millet | Lohà | iron |
| Gonglun | } onion | Kalàl | tin, (? tinning) |
| Karam | | Sikkà | lead |
| Methri | leak | Tàmbà | copper |
| Palak | turnip | Pittul | brass |
| | cabbage | Sonà | gold |
| | thyme | Chàndi | silver, pure |
| | spinnage | | |

| | | | |
|--------------|----------------------|----------|--|
| Rupā | silver | Dhoupp | nape of the neck |
| Jist | pewter | Kan | ear |
| Pārā | } quicksilver | Pāpdī | soft part of ear |
| Jiwā | | Kapūpe | lobe |
| Hurtāl | yellow orpiment | Suthap | trowers |
| Patharr | stone | Nālā | } breeches string |
| Pattar | leaf | Nādā | |
| Angūtā | nail | Pag | turban |
| Chichī ungul | little toe | Mitthā | sweet |
| Pabb | sole | Khattā | sour |
| Adī | heel | Koudā | bitter |
| Gītā | anle | Kasailā | pungent |
| Pipī | calf | Sahūnā | salt |
| Godā | knee | Bakbakā | nauseous |
| Chapnī | knee-cap | Phikā | insipid |
| Sathal | } thigh | Tattā | hot |
| Pat | | Thandā | cold |
| Chutud | buttocks | Narm | } soft |
| Nāv | } navel | Kulā | |
| Dhunī | | Sakhat | hard |
| Tang | leg | Kharwā | rough |
| Pet | stomach | Kulā | smooth |
| Ojri | tripe | Dhilā | liquid |
| Andrāp | entrails | Thindā | greasy |
| Phiphadā | lungs | Uchhā | high |
| Hath | hand | Nigwā | low |
| Jibh | tongue | Mehngā | dear |
| Tālī | palm | Sastā | cheap |
| Vini | below the elbow | Gillā | wet |
| | arm | Sukka | dry |
| Kohpi | elbow | Sukha | bhang |
| Doulā | arm above elbow | Wāl | hair |
| Mohdā | shoulder | Pate | locks of hair |
| Pith | back | Muchhā | mustachoes |
| Gal | } neck | Dādī | beard |
| Galā | | Jūdā | top knot of hair |
| Sangi | wind-pipe | Mendī | ringlets |
| Hoth | lip | Kachh | } armpit |
| Dand | tooth | Bagal | |
| Alāshā dāhpā | jaw tooth | Kuth | cue of hair |
| Khādī | } chin | | { plaited hair by
which virgins
are distinguish-
ed |
| Khodī | | | |
| Kalā | jawbone | Palkā | |
| Galh | cheek | | virgin |
| Nakh | nose | Kimārī | widow |
| Kothī | } grisel of the nose | Randī | bridegroom |
| Ghodī | | Gabrū | } husband |
| Akh | eye | Gharwālā | |
| Pipill | eyelash | Kāwānd | bride |
| Annā | eyeball | Woutī | wife |
| Chhappar | eyelid | Gharwālī | gunpowder |
| Bharwatā | eyebrow | Dārū | ditto |
| Mathā | forehead | Barūd | grass |
| Putputī | temple | Ghā | grain |
| Tālū | scalp | Dawā | } white |
| Kopaq | crown | Chittā | |
| Ghandī | palate | Baggā | |

| | | | |
|--------------|---------------------|------------|------------------|
| Lāl | red | Jhalā | mad |
| Kālā | black | Phānwānī | pl-asure |
| Nīlā | blue | Kāwāq | angry |
| Pīlā | yellow | Māndā | ill |
| Sāwā | green | Changā | well |
| Machhī | fish | Pīd | pain |
| Māh parashād | flesh | Kagadh | paper |
| Sūraj | sun | Dawād | inkstand |
| Chan | moon | Lekhan | pen |
| Pīnī | palanqueen | Khūh | well |
| Tārā | star | Rāh | road |
| Ubbhurā | } east | Pendā | journey |
| Chaqdā | | Nāo | name |
| Sehandā | west | Wadhyai | fame |
| Parbat | north | Kāthī | saddle |
| Dakhan | south | Rakāb | stirrup |
| Wāh | wind | Dumchī | crupper |
| Hanerā | darkness | Tāhrā | saddle-cloth |
| Hanerī | dust storm | Mukhtā | head stall |
| Chhapay | light | Farākhi | surcingle |
| Dākh | grapes | Hall | plough |
| Duhngā | deep | Panjāli | yoke |
| Kachā | raw | Suāgā pat | drag |
| Pakkā | cooked | Kahī | pickaxe |
| Singh | horn | Rambā | spade |
| Sumb | hoof | Dātri | sickle |
| Khur | divided ditto | Pailī | field |
| Unn | wool | Pahād | hill |
| Rūg | cotton | Tībhi | hillock |
| Rūnī | do. | Chhil | } bark |
| Boli | language | Sakk | |
| Bhukh | hunger | Jad | root |
| Treh | thirst | Tehni | branch |
| Jhutī | shoes | Kotdī | room |
| Annā | blind | Dahlān | verandah |
| Gungā | dumb | Ithā | brick |
| Dorā | deaf | Vedā | terrace |
| Sujākā | having sight | Tāyā | father's elder |
| Lūhlā | lame with both legs | Dādā | brother |
| Kānā | blind of one eye | Nānā | father's father |
| Bhengā | double sighted | Par nānā | mother's father |
| Laggā | lame of one leg | Shakarnānā | nānā's father |
| Sidhā | straight | Potrā | father of latter |
| Dingā | crooked | Padotrā | grandson |
| Apāthā | upset | Bharjāi | great grandson |
| | | | sister-in-law |

Vocabulary of Verbs.

| | | | |
|----------|---------------|--------|----------|
| Avpā | to come | Pivpā | to drink |
| Jāvpā | to go | Satpā | to throw |
| Leāvpā | to bring | Devpā | to give |
| Le jāvpā | to carry away | Lenā | to take |
| Rakhpā | to put | Nachpā | to dance |
| Uthāvpā | to raise | Kudāpā | to leap |
| Uthpā | to rise | Haspā | to laugh |
| Baithpā | to sit | Rōpā | to weep |
| Khāvpā | to eat | Sadnā | to call |

| | | | |
|-------------|--------------------------|-----------|-----------------------|
| Marpā | to beat | Khalonā | } to stand up |
| Wichārā | to think | Khadonā | |
| Tolpā | to weigh | Gavāvnā | to lose |
| Mechnā | to measure | Khulāvnā | to loosen |
| Pakāvnā | to cook | Dhakāvnā | to cause to be pushed |
| Ubālnā | to boil | | to dig |
| Bhunpā | to roast | Khoturnā | |
| Kholnā | to open | Bijpā | } to sow |
| Tapnā | to bound | Rahwnā | |
| Bannā | to bind | Patnā | to pluck |
| Wadhānā | to cut | Mangnā | to ask |
| Phādpā | to break | Tuthpā | } to break |
| Doudpā | } to run | Bhājū | |
| Drukā | | Khurukpā | to scratch |
| Likhnā | to write | Chatnā | to lick |
| Padnā | to read | Dabnā | to press |
| Phirpā | to stroll | Vithpā | to pour |
| Chiknā | } to pull | Phuknā | to blow |
| Kichnā | | Khedpā | to play games |
| Pānjnā | to wipe | Kākpā | to call |
| Chhilnā | to scrape | Khiskānā | to sneak away |
| Dignā | } to fall | Uturnā | to descend |
| Dhainā | | Khalwāvnā | to make stand |
| Digāvnā | to make fall | Kharchnā | to spend |
| Dig pāvā | to fall | Chudāvnā | to release |
| Jāpnā | to bring forth | Chāpnā | to ascend |
| Gālī kadhnā | to abuse | Dhiknā | to push |
| Karz lenā | to borrow | Sivpā | to sew |
| Harāvnā | to remove | Wadhānā | to grow |
| Turnā | to walk | Tilākpā | to slip |
| Wajāvnā | to play on an instrument | Darrpā | to fear |
| | | Naspā | to retire |
| Ghulnā | to wrestle | Bharuā | to fill |
| Kambpā | to tremble | Tukū | to chop |
| Akhnā | to speak | Thakornā | to care of, to mind |
| Auwāvnā | to make bring | | |

A short Sikh Vocabulary.

| | | | |
|---------------|--------------------|---------------|-------------------------------------|
| Muslā | a Musalmān | Chūngnā | to smoke |
| Konā singh | bald-headed | Dosā | Dost Muhammad |
| | s.m. disrespect | Rangā | Aurangzeb |
| | to Musalmāns | Pahul le, opā | to become a convert |
| Sukhā | the intoxicating | Kachā singh | breeches |
| Supērā | plant bhang | Angā | coat |
| | the vessel in | Kesā | } hair weavers, an epithet of Sikhs |
| | which bhang is | Dhārī | |
| | bruised | Dātān | tooth brush |
| Chakhnā | to eat or drink | Granth sāheb | the Sikh scripture (Granth) |
| Parshād | eatable | | fire |
| Māhāp parshād | meat | Agan | to read |
| Chitā bajāvnā | to make water | Wāchnā | a matchlock |
| Kāve phirnā | to ease one's self | Rāmjangā | a pot |
| Suchetā karnā | to make ablution | Bāti | a spoon |
| Niwāj | prayer | Kadchī | a vessel for cooking pulse |
| Mast jad | } a mosque | Waltoi | |
| Thattī | | | |
| Gadhī | a hooka | | |

| | | | |
|---------|---------------|--------|-------------------|
| Kāj | marriage | Lāngri | butler |
| Sultānā | Sultān Muḥam- | Langar | cookroom |
| | mad Khān | Dalle | pieces of flesh |
| Pirnā | Pir Muḥammad | Lās | soup |
| | Khān | Karpā | to cook (not pa- |
| Phattā | Wazīr Fattēh | | kāvnā) |
| | Khān | Warjā | to stop one's own |
| Tambārā | Timaur Shah | | dinner, i. e. to |
| Pendhyā | Pendā Khān | | accept an invi- |
| | (Tanāuli) | | tation |
| Gadwāl | cup-bearer | | |

Mahārāj Ranjīt Singh has the following peculiar Vocabulary of his own.
 Bandbast, opening of the bowels, Dast in Persian.

Thirmilt, a check or curtain, cheekā in Panjabi.

Khismatī, a ewer, chilamchī in Persian, because chilams (pipes are not lawful in the Granth.)

Sugdā (clever) a stool, instead of Modā because this word means a fool.
 Kangā Sāgar, a goglet, Aftāba in Persian.

Sentences.

Wār jī (properly Wā Gurājī) kā The Sikh salutation.

khālā

Tuhādā nān kī,e

Tusi kiddar jānde,o

Tūn kiddar jānā ēn

Is pindā nān hī,e

Tuhānū thand lagī,e

Oh pind kinā dūr,e

Tuhādī umur kitnī ē

Tusi sādde bhirānū jānde o

Isdā mul kī loge

Tuhādiyān trimatān kitniyān

Tusi ghodyānū kī dende,o

Tuhāde ghodyānī kī khurāk ē

Tusi kis wāste mere utte ghusse o

Tuhādā peo juvndā ē

Nāh tre vare huen jo parā hogaya ē
 or (margayā ē)

Tusi kadīn Turkisthānū ga,e,o

Din vich kitnī verī khānde,o

Kī, kī, khānde,o

Nazar āondā ē jo aj mīn wasegā

Kī kar nazar āonde

Asāde kul hek pāredī kikmat,e

Ek man bī wichon kitnā hāsal hun-
 dā,e

Aj kal thon (nālon) bahut thand,e

Je tuhānū vel nehin tā āpne gumāsh-
 tenū ghal denā

Aj bazār wīch hundidā kī bhā,e

Hundī mathī

Hundī chaddī,e

Koī sathtān nehin lagī

Tusi odaretān nehin

What is your name ?

Where are you going ?

Ditto, ditto, ditto, to an inferior.

What is the name of this village ?

You have caught a cold.

How far is that village ?

What is your age ?

Do you know my brother ?

What will you take for this ?

How many wives have you ?

What do you feed horses on ?

What is your horses' food ?

Why are you angry with me ?

Is your father alive ?

No, these three years since he died.

Have you ever been to Turkistān ?

How many meals do you make a day ?

What do you eat ?

It seems as if it would rain to-day.

How do you know ?

I have an instrument containing
 quicksilver.

What is the produce of a maund of
 seed ?

To-day is much colder than yester-
 day.

If you have not leisure send your
 agent.

What is the exchange of a bill to-
 day in the bazār ?

The rate has fallen.

The rate has risen.

You are not hurt are you ?

You are not uncomfortable are you ?

Tusi odarnā nehī jedī gal mango
sohī hāzar, e eh tuhādā apnā ghar, e
dusrā nehī jānnā

Asi āpne kam kāj wich rudde renne-
yān ne tān dam dam wich tuhāde
kul ponchiye

Is hauste tuhādā kī kharch āyā, e
Hāzār ek rupayā lagā howegā asāde
sābkār nū pakkī khabe, e uskolon
puchke das dewānge jo tuhānū
bahut lod e tān

Don't make yourself uneasy, what-
ever you want shall be forthcom-
ing; this is your own house and
not a strange one.

I am busy about my own affairs or
I would be with you every mo-
ment.

What have you spent on this cistern?
It might have cost me a thousand
rupees or so, but my steward
knows the exact sum and will tell
you if you particularly require
and will ask him.

Dialogues.

Illustrative of the private character of the Ruler of Lahore.

Mahārāj jī, Kābul dā ikbār āyī e

Hājar karo

Mahārāj jī hājar e

Fakir horānū bulāo

Fakir jī hājar ho, o

Sardār Dost Mamadā, e yā kisse hor
dā, e

Mahārāj jī, Sardār Sāhabdā, e

Hachā pado kī likhyā e

Apdī umur darāz hove vīh bhār
dālde do ghode ek talwār hazār
mu allāde waste hāzar en hazūr
kābul farmān

Nikkā Mishar hāzar hove

Mahārāj jī ershād

Mishar jī, tusi Belirām horān kol
jāo ek hāthī hauda chāndī dā ek
bandūk Sindhy, Gujrāthī talwār
das jode dushālyānde rang birangi
hache mahīn howan Dost Mamad
waste bhej do fakir jī tusi bī likho
tedā sādā rāh hek chāhī dā agge
isthon hoī bandobaast pakkā ban
jiswich tūn saukhā rahen, nehī
tān Sarkār Dusserā karke chudan
wālī, e na khaī jo mainū khabr
nehī kiti ne

Jo Hazūrne ershād farmān likhe
gai en

Wakil nāl tor deo

Rājā sāheb horānū bulāo

Mahārāj jī, hājar ān

Rājā jī, panj ardāl āpne bhej deo ate
jā ba jā likh bhejo jo ek sāheb
Attock wālē rahon awuden sau sau
rupayā majāl ba majāl, ātā vīh

News from Cabul has arrived your
highness.

Bring the man in.

He is here your highness.

Call the faqueer.

Will you please to come in faqueer?

Is the letter from Sardār Dost Mu-
hammad, or from any one else?

It is from the Sardār your highness.
Well read what is in it.

May your age be great: twenty loads
of fruit, two horses and a sword,
are here for your supreme high-
ness; will your highness deign to
accept them?

Here, Nikkā Mishar.

Your highness, what orders?

Mishar, do you go to Belirām and
send for Dost Muhammad an ele-
phant with a silver boudā, a Sin-
dhian matchlock, a Guzeratī sword,
ten pairs of shawls; let them be
fine and of different colors: and,
faqueer, do you write and say his
and my road is one, and that he
must make some good arrange-
ment, by which he may live com-
fortable; or else the Sarkār in-
tends to march on him after the
Dusserā; and tell him not to say
he was not forewarned.

What your highness ordered, is writ-
ten.

Send it by the Wakil.

Call the Rājah? (Dhyan Singh).

I am here your highness.

Rājā, send five of your own orderlies
and write to every place that a
gentleman is coming by the At-
tock road; give him one hundred

man, do man chànwī, man ghī.o
panjāh kukud, das ghade dudhde
hor dahlg keasā pāwanū, panj son
āndā manjān, lakhriyān, bhānde
mittide hor jo lod howe ne sab
khātar karnī chauki pahra majal
ba majal dā rakhnā jimmā tuhā-
dā e

Mahārāj jī, sat bachan

Mishar jī, Fattā Bhayenā ghal de, o
Jamadār sabb horānū bula lyāwe

Jamadār jī, jis tarah rāje sabbu er-
ahād hoyā, e tusi bī āpnī muluk
wich likh bhejo jo sāheb kisi gale
khafa na howan; manjil bamanjil
dī rasid sabbandī hājar hove

Miyān Ilai Baksh Kumdān ta
Myān Sultān Mahmūd, te Mirjā
Mandar Aly, nyāhrān nyāhrān
kārtū jinsī tophānde ta ikkī ikkī
ghodnālande peher din rende jo
sāheb dāktal howanje hukm, e

Mishar, Sukhrājnā hukm de ghale
do kampaniyān Jahangīr de mak-
hāre laigs rehan ate pā rikāb
sāhānde hājar rehan

Jedī Sing, āpwālī Paltan e tansālī
de bār laigs rehe jis wele sāheb
dāktal howan addall wich āve

Mishar jī, Kutbenā hukm deo jo
bīvyānū hūlā leāve panjāh panjāh
rupeyā toshektāne wichon le de, o
eh hukm de de, o jo bap tap ke
āwan

Mishar jī, Khair Aly Khān Gubār-
chynū panch sau rupeyā lekhwā
deo atē eh hukm deo jo ghari
rātthon agge agge dīp malā saman
wich hājar hove

Sātār Bāghwān hājar hove

Mahārāj jī hukm

Kal Shālā bāgh wich pehr diuthon
agge agge maifal sabbān waste
hāzar hove

Mishar jī, Mishar Belirāmnū ākho,
hek kanthā mot yāndā jodī kady-
āndī biriyāndī jadāv dushālā bhārā
hek thān kinkhābdā panch sau
rupeyā sabandā, Khismatqārān
waste hek hek khes uchā hor jede
sābānde ādmī onhā waste wade
wele kul shālā bāgh wich hāzar
howan

rupees at every stage, flour twen-
ty maunds, two maunds of rice, a
maund of ghee, fifty fowls, ten
pots of milk and curds to wash
his hair, five hundred eggs, cots,
firewood, earthen pots, and what-
ever he may want; let him have a
guard at every stage. This is
your trust.

Truly spoken your highness.

Mishar, send Fattā Bhayyā to call
Jamadar Kushāl Singh.

Jemadar, do you also as I have or-
dered the rajah and write to your
district that the gentleman may
not be uncomfortable, and get al-
so his receipts at each stage.

Tell Miyān Ilai Baksh Kumdān,
Myān Sultan Mahmūd, and Mir-
zā Mandar Aly (to fire) eleven
rounds from the garrison guns,
and twenty-one from the field
pieces a pahar before sunset when
the gentleman arrives.

Mishar, send to Sukhrāj and tell him
to keep two companies in readi-
ness at Jehangīr's tomb as the
gentleman's escort.

Let the Singh regiment be in readi-
ness outside the Tanksālī gate to
accompany the gentleman as an
escort.

Mishar, tell Kutba to call the ladies
(dancers), give them fifty rupees
each out of the treasury, and order
them to come dressed out.

Mishar, let Khair Aly Khān Gubār-
chy receive five hundred rupees,
and tell him to have lamps ready
in the Saman bastion a ghari be-
fore night.

Let Sātār gardener be called.

What order your highness?

To-morrow before nine o'clock, let
an entertainment be prepared for
the gentleman in the Shālā gar-
den

Mishar, tell Mishar Belirām to have
to-morrow morning ready at the
Shālā garden, a pearl necklace, a
pair of gold bracelets set with
diamonds, an expensive pair of
shawls, a piece of khinkāb, five
hundred rupees for the gentle-
man's servants, and a valuable
khes each for his other men.

Nikā Diwān jī, Munahī Sarabdhyaḷ
hājār karo

Parwānā lekho Raje Suchet Singh
harānū, hājār swār do hazār pyā-
dā Peshāwaron kūch karke Bannū-
dā bandbaast karan, hek Panwānā
Futteh Singh Mān horānū lekho
Rājā Sābdi Kamāp manni tāsāp
hor inhānde hukm wichop adūl
nehig karnā

Eshād likho Diwān Dannūnū, Gu-
zerāt dā muluk Sarkār dendi, e
Kabūl kar lai rupeyā panj hazār
nazarānā sarkārdā leāve jis wele
lyāve us wele khilat pehan, jā, e

Mahārāj jī, Diwān hori kabūl nehig
karde

Aiwē bhadrā e nazarānā wāste
kabūl nehig kardā do hājār chad
deo āpe man legā

Mahārāj jī, Diwān horāne map liyā e
Ditthā Jamadār jī, bhadrwēdā tamā-
shā do hazār rupeyā chadyā tāp
kipkar man liyās

The Mahārājā ill with a pain in his knee.

(A Farash). Mahārāj jī, hek wadā
Sayad e medi tang dukhdi sī hath
lāvde ip khair ho gai, i

(The Mahārāj). Mishar jī, oh Say-
adnū leā Ruldū Farāsh thop jāgā
puchh leni hāthi kaswā le, o wich
chadākar leāvnā adab nāl

The Sayad arrives.

(Sayad). Bhā, i tenū sukh hove
pādshāi peyā kar gajdā raho

(Mahārājā). Mishar jī, panch pot-
lyān sau sau diyān leāo

(To the Sayad). Mahārāj jī, kal bi
darshan devna

(Another Farash). Mahārāj jī, hek
sādh āyā Gurū Nānak sābdi juthi
hai on hākul

(The Mahārājā). Uswaktdi rakhi
huis hājar karo onhā Sādhānū
Mishar jī, asādā khāsā be jāo udde-
wich onā sābānū chadākar le ao

The Sādh arrives, unfolds the shoe from a hundred wrappers. The
Mahārājā salutes it and applies it to his eyes, head and breast.

(The Mahārājā). Mishar jī, hazār
rupeyī dā pind dharmarth Wazir-
abad de tālake wichop likhwā de, o

Nikā Diwān, call Munahī Sarab-
dhyaḷ.

Write an order to Rājā Suchet
Singh with one thousand cavalry
and two thousand infantry to
march from Peshāwar and settle
Bannū, and write an order also to
Futteh Singh Mān to put himself
under the Rājā's orders and not
to disobey any of his commands.

Write an order to Diwān Dannū
that the Sarkār has given him the
country of Guzerāt, order him to
accept it, and to give five thou-
sand rupees nazarānā for it; at
the time of presenting which he
will receive a khilat.

Your highness, the Diwān refuses to
accept it.

Just like the rascal, he does not
accept it on account of the naza-
rānā; take off two thousand and
he will obey.

Your highness, the Diwān has agreed.
Do you see Jamadār, the play of the
rascal? two thousand rupees have
been remitted, why has he accept-
ed it now?

Your highness, there is a great Sayad
who cured a bad leg of mine by
the touch of his hand.

Mishar, bring that Sayad; ask
Ruldū Farāsh where he lives, get
ready an elephant and bring him
on it with respect.

Brother, may you be well and carry
on your government; may you
continue to bluster in the world.

Mishar, bring five bags of a hundred
rupees each.

Your highness will, I hope, give me
a sight of yourself to-morrow.

Your highness, there is a holy man
who has one of Gurū Nānak's
shoes.

What, has he preserved it since that
time; bring here that Sādh and
take my own khāsā, Mishar, for
him to come in.

The Sādh arrives, unfolds the shoe from a hundred wrappers. The
Mahārājā salutes it and applies it to his eyes, head and breast.

Mishar jī, order a perpetual grant
to be written of a thousand-rupee
village in the province of Wazir-

ateg juthi sabbānā toshakkāne wich
rakhwā de, o

(*Another Servant*). Mahārāj ji, hek
wadā pandit Kashi on āyā wadā
padyā huā ounāpās hek ling o
Mādwjīdā o farmaunden pāven
jehā dukh dard Sarkārānā hove
lāvnde nālē sukh hojāve. Tad
jāpo jo ling sacha, e

(*The Mahārājā*). Mishar ji, hāthi
haawā lo chāndide haudewālā pan-
dit onārū wich bahāke sitabe hājar
karo

(*The Servant*). Mahārāj ji, pandit
hori wadā sakht mizāj haij āwāp
ki mehij āwāp

(*The Mahārājā*). Jis tara jāno
unhānū leāo hek panch sau rupeyā
bi le jāo toshakkāne wichon

(*Servant*). Mahārāj ji, sat bāchan

The pandit arrives, takes out the stone, the Mahārājā rises and rubs it
over his body.

(*Mahārāj*). Mishar ji, hek hazār
rupeyā hor leākar mathā teko
pandit horānū das rupeyā roz
lawā deo

(*Pandit*). Hamānū kuch nehij
bakār Mahādevji kā hukm hai jab
ek Rājā hachhā hovegā to yahān
se uthanā isse hukm muāfik ham
kashī se ture haij

Tusi tīn chār roz darbār maukūf
karo

After some days, the Mahārāj hears that the holy pandit has fallen in
love with a dancing girl, and is accordingly an imposter; his only remark is,
Sādh log en unko eh bāt ban āvti e

Don't hold your court for two or
three days.

These are holy men, they can do
these things if they like.

Specimen of Punjābī verse.

Simij badan yarafshān chehrā lab
surkhī misl anārē phul hazārē je
an galzārē

Ateṅ mirg akhijti mirg hairāni
vekh khūni main tumhārē māran
hyāp sihārē

Mār bīnār hazār pae teri zulf kun-
dul wal māre wal wal sādē mo, e
wichārē

Par bhuj bhuj de, an Kalandar āshik
māran māre karan kakārē baith
kinārē

Silver body, bespangled (freckled)
face, red lips like the pomegra-
nate, or poppy, or rather like a
bed of flowers.

And lascivious eyes shaming the
deers; behold those blood-shot orbs,
murderous stealers of the heart.

Thousands have fallen sick and died;
thy locks are ringlets in which
you catch and burn us, and we die
hopeless.

But Kalandar, as he burns with love,
sings, sighing, and bewailing in
retirement.

2nd.

Chale nīr akhijti behadd jadh yār
vidā kar chale

Tears without measure started from
mine eyes, when my lover started
at our separation.

| | |
|---|--|
| <i>Jhale</i> leg nasihat dende koun sàng
wicheo dedi <i>jhale</i> | <i>Boarish</i> people reprehend me, but
who can <i>bear</i> the spear of absence? |
| <i>Bha'e</i> akl jehe chhad jànde jithe
ishk marendà <i>bha'e</i> | <i>Standard</i> wits are lost where love
plants his <i>standard</i> . |
| <i>Palle</i> akl na rahi Kalandar jàn ishk
àve ith <i>palle</i> . | Kalandar <i>possesses</i> no wisdom when
love <i>possesses</i> him. |
| <i>Chasm</i> bandùkh tep surmà ranjak
tede zulf pakhà,e | Eye for gun, antimony for priming
and ringlets for a match which is
lighted. |
| Goli khal disse mukh uppar jàn oh
shest karà,e | That mole appearing on thy cheek
is a bullet when you present it to
the mark. |
| Oh mare dilnù mùl na kusse jàn oh
kas chalàe | She is aiming at my heart but can-
not <i>strike</i> it though she loads
and fires. |
| Par Kalandar matlab tayyep pàe
jahàn àpnà àp kohà,e | But know, Kalandar, you will then
gain your ends when you <i>strike</i>
yourself. |
| Dakhàndi main pùñchi pai mere
pair sughlàn nài tarode | I have arrived at the summit of
pain; my feet have anklets of
thorns. |
| Ahñ nài parotyàn hanjùn vekh
ishkede sore | By sighs my tears have been <i>forced</i>
out, behold the <i>force</i> of love! |
| Hàr singàr kità sàb gham dà jadñ
main thop yàr wichode kùk Ka-
landar rab dàdhe agge mat pawap
hetànà mode | I decked myself in mourning weeds
when my love parted from me!
entreat Kalandar before all-pow-
erful God that your " <i>hot</i> " may
return. |
| <i>Jhalke</i> pakñ tab ishkdà main kàhil
kitt <i>jhalko</i> | The fire of love does not <i>kindle</i> , I
am <i>kindled</i> after long patience. |
| <i>Chalke</i> bir hun de mùph ài hupa
jàwày kith wal <i>chalke</i> | I <i>threw</i> myself into the fire, now
how shall I get <i>through</i> . |
| <i>Ralko</i> dukhàn sùlàn kuthi sukh gae
sàthop <i>ralko</i> | Thorns and grief have <i>left</i> me pro-
strate, and pleasure has quite <i>left</i>
me. |
| <i>Kalke</i> jamme haran majàkhan pài
jàn Kalandar <i>kalko</i> | The child of yesterday is <i>roasting</i>
me. The soul of Kalandar is
<i>roasting</i> . |

A VOCABULARY OF THE BARAKY LANGUAGE.

Introduction.

The Barakis are included in the general term of Parsiwàn, or Tàjak†; they are original inhabitants of *Yemen* whence they were brought by SULTÁN MAHMUD of *Ghazni*; they accompanied him in his invasion of India, and were pre-eminently instrumental in the abstraction of the gates of the temple of *Somnath*. There are two divisions of the tribe. The Barakis of *Rajàn* in the province of *LOHGAD*, who speak

* Proper name.

† The popular derivation of the word Tàjak is that the ancestors of that tribe were the keepers of the Tàj (crown) of the Arabian prophet, Tàj besides meaning a kingly crown is applied to the distinguishing cap of a Muhammadan fakir (hermit).

Persian, and the Barakís of *Barak*, a city near the former, who speak the language called Barakí; SULTÁN MAHMÚ'D, pleased with their services in India, was determined to recompense them by giving them in perpetual grant any part of the country they chose; they fixed upon the district of *Kāniguram* in the country of the *Wazīrís* where they settled. There are 2000 families of the Rājān Barakís under RASÚ'L KHÁN who receives 2000 rupees a year from DOST MUHAMMAD KHÁN. The contingents of both these chiefs, amount to 50 horsemen who are enrolled in the *Ghulām Khána* division of the *Cabúl* army. There are also 2000 families of Barakís at *Kāniguram* under SHÁH MALAK who are independent. The Barakís of this place and of *Barak* alone speak the Barakí language.

We receive a warning from the study of this Vocabulary, not to be hasty in referring the origin of a people merely from the construction of their language; for it is well known that the one now instanced was invented by MÍR YU'ZU'Z who led the first Barakís from *Yemen* into *Afghanisthan*: his design was to conceal and separate his few followers from the mass of *Afghans* (called by them *Kásh*) who would no doubt at first look upon the Barakís with jealousy as intruders. The muleteers of *Cabúl*, being led by their profession to traverse wild countries and unsafe roads, have also invented a vocabulary of pass-words.

Vocabulary*.

Roah, day
Gha, night
Kalának, boy
Dadai, father
Zarigag, girl
Māw, mother
Khawār, sister
Marzā, brother
Wokh, water
Aron, fire
Tikhan, bread
Kshār, city
Grām, village
Ner, house
Darakhht, tree
Būta, shrub
Yāsp, horse
Gop, wood
Yāsp, mare
A,ū, deer
Khar, ass
Khātir, mule
Kurra, foal
Kirjī, fowl

Kaftar, pigeon
Kouk, Greek partridge
Ough, camel
Khirs, bear
Shādi, monkey
Bakri, goat
Nargoi, bull
Mādgoi, cow
Ganum, wheat
Rizza, rice
Pyāz, onion
Tambākū, tobacco
Shalgham, turnip
Karam, cabbage
Turab, radish
Kajar, carrot
Anār, pomegranate
Gulāb, rose
Nimek, salt
Tel, oil
Shakar, sugar
Khand, refined sugar
Guḍ, molasses
Nabāt, sugar-candy

March, pepper
Rup, clarified butter
Maskā, butter
Wolkh, egg
Pikakh, milk
Ghip, curds
Topi, butter-milk
Khat, bedstead
Lyāf, coverlid
A'big, iron
Kalāi, tin
Surb, lead
Mis, copper
Brinj, brass
Tillā, gold
Nukhra, silver
Gap, stone
Balk, leaf
Pushht, back
Sinā, breast
Nas, stomach
Lab, lip
Gishy, tooth
Mukh, cheek

* sh represents ʃ, in distinction from sh which stands for ʃh.

Nent, nose
 Tsimi, eye
 Sar, head
 Got, ear
 Partuk, trousers
 Kâwâsh, sweet
 Turash, sour
 Tegh, bitter
 Shor, salt
 Tokha, hot
 Tsâka, cold
 Narm, soft
 Kilakhâ, hard
 Pabega, high
 Zariya, low
 Kemat, dear
 Arzân, cheap
 Dîri, hair
 Wadai, wool
 Pambâ, cotton
 Wroakt, bread
 Brût, mustachoes
 Mâhi, husband
 Nâk, wife
 Dârû, gunpowder
 Ghwash, grass
 Speg, barley
 Ispenq, white
 Sûgha, red
 Gkarâsa, black
 Nil, blue
 Zed, yellow
 Sûin, green
 Mâhi, fish

Gâka, meat
 Toavi, sun
 Marwokt, moon
 Stûra, star
 Mashrik, east
 Magrib, west
 Shammâl, north
 Junûb, south
 Bâd, wind
 Parogt, light
 Târâk, darkness
 Angûr, grapes
 Pukuk, ripe
 Nakpukuk, raw
 Shâkh, horn
 Sumb, hoof
 Palla, divided hoof
 Kaush, shoes
 Kor, blind
 Gung, dumb
 Karr, deaf
 Râst, straight
 Kaj, crooked
 Stud, tired
 Dîmy, pain
 Kâghaz, paper
 Mushwâni, inkstand
 Kalam, pen
 Chhâ, well
 Râh, road
 Nâm, name
 Zin, saddle
 Gîrî, mountain
 Kâisht, brick

Bâbâ, grandfather
 Nawâsai, grandson
 Kââshnâ, sister-in-law
 Pabega, above
 Podzema, below
 Wâvera, in
 Paneght, out
 Indâ, here
 Yuwal, there
 Makh, before
 Papeta, after
 Razai, quick
 Kârâr, slow
 Subuk, light
 Wazmîn, heavy
 Kârâb, bad
 Shirra, good
 Narrai, thin
 Ghoza, fat
 Sturra, large
 Zari, little
 Shon, to-day
 Sâr, to-morrow
 Parin, yesterday
 Kân, when
 Perî, now
 Bas, enough
 Sher, yes
 Na, no
 Key, why
 Zut, much
 Dûkh, little
 Tar, and

Numbers, Cardinal and Ordinal.

1 she
 2 do
 3 ghe
 4 tsâr
 5 pens
 6 ksha
 7 wo
 8 ânâst
 9 noh
 10 das

11 shandas
 12 duâs
 13 shes
 14 tsares
 15 panzes
 16 shales
 17 haves
 18 ashtes
 19 nes
 20 jist

30 shist
 40 tsasht
 50 panzast
 60 kshoshty
 70 hawai
 80 hashtai
 90 nuvi
 100 sud
 1000 hazâr

Auwal, first
 Duyam, second
 Seyam, third
 Châram, fourth

Panjam, fifth
 Shasham, sixth
 Haftam, seventh
 Hashtum, eighth
Verbs.

Nauwam, ninth
 Dasum, tenth

Razai, come
 Tee, go
 Rawarra, bring
 Aglona, take away

Gon, place
 U'ra, take up
 Neh, sit
 Hust, rise

Khuron, eat
 Shera, give
 Nassa, take
 Dzana, beat

Sentences.

Az eipai yum
 Tù gudapteo
 Dreky oghok
 Toetar màkh marza ye
 Azr tù dagađ pitsen
 Tar tuna rupe dà à
 Tar tù muwàjib tsùna
 Nimaz digar shuk
 Ta tsun umuron
 Tsun kalàn daron
 Bàran rasàk
 Tar boakshàr tsum petsa
 Tsun bùmà daron
 Yàspakf tsà shai
 Pa tsùna shai ka
 Tàfor dadai guda
 She chàn busak ka muluk
 Yàspdi to sarrang arghe shákai
 Pera tsa kun
 Ta shujàl Mulki jangine tarmàkh
 marza zakàmi shuk
 Kurra kàriner bhùsà tsarà na kun

 Ràhiner kuman ghàl luchh dà kum
 Tà kàkh kàalk zud khuranakai
 Kurra gràminer tsun kharwàr ga-
 num à ida
 Tar màkhanas bademi
 Te Herat ràhiner baladon
 Màka amarokh ka Kàmran zud sà-
 lim a
 Tsar penz sadaikt she yàspashok

 Kurra hauzjar tar tos tsun kharch
 shuka
 Indadi batsen saudà aglon

 Tarra thàn kemat ba tsùn sa
 Tarra thàn kemat tar màkha nazari-
 ner padas tuman
 Kurra mulkaner khimkàb kewun
 gràn a
 Tar tosi Giriner hinj paida sa

 Hà shai ba patsa kàr raza
 Shou Mullà hera she jàe tol shka

 Zar tos zabànaner badalà dàhà ki
 nagadàhà
 Nah kok ka ba badalà ghok pa Pàrst
 baghok
 Ta kàkh i menziner tsep zai sham-
 shiri a
 I' Kàshiner Popalzai sher shams-
 hiri a

I am a soldier.
 Where are you going?
 He spoke false.
 You are my brother.
 We will go together.
 Have you a rupee with you?
 What is your pay?
 It is the time of afternoon prayers.
 What is your age?
 How many children have you?
 The rain has come.
 How far is your town?
 How much ground have you?
 What do you give your horse?
 What is his price?
 Where is your father?
 It is a year since he died.
 How did you fall from the horse?
 What shall I do now.
 My brother was wounded in the
 battle of Shujawal Mulk.
 Why don't you take care (what you
 do) in this affair?
 A robber stripped me on the road.
 The Afghan is a starving nation.
 What quantity of wheat is produced
 in that village?
 I have a pain in my stomach.
 Do you know the road to Herat?
 I hear that Kamran is a great
 tyrant.
 He gave four or five men for a sin-
 gle horse.
 What expense have you incurred on
 that tank?
 What merchandise do you take
 from here?
 What may be the price of this piece?
 The price of this piece in my opi-
 nion is 10 tumans.
 Why is khimkab so dear in this
 country?
 Is asafetida produced in your
 mountains?
 What is the use of this thing?
 The Mullas have all assembled in
 one place to-day.
 Are verses written in your language
 or not?
 No; any one who rehearses verses,
 rehearses them in Persian.
 What tribe of Kàsh (Afghans) are
 the best swordsmen?
 Among these Afghans the Popal-
 zais are the best swordsmen.

| | |
|----------------------------------|-------------------------------------|
| Sher maltagia pa tamam Candahar | This is a good gun such as is not |
| ki sher maltaganagda | procurable in all Candahar. |
| Tsun roah bad kafila raza | In how many days will the caravan |
| | arrive? |
| Tarmakh utarak ta charsukh kara- | I have put up in the caravansera of |
| wansarainer shuk me bayad she | the charsukh (four bazars) ; you |
| war kamakh tamaner razai | must come and see me some day. |

A VOCABULARY OF THE PASHAI LANGUAGE.

Introduction.

The language is spoken by the people called Pashais who inhabit the districts of *Mandál, Chitlál, Parená, Kundí, Seva* and *Kulmán*.

Vocabulary.

| | | |
|--------------------|-----------------------|---------------------|
| Dawás, day | Tàti, father | Lám, fort |
| Vyál, night | Ái, mother | Goshin, house |
| A'st, hand | Láyà, brother | Kađi, tree |
| Bálákul, boy | Sáyà, sister | Ghodà, horse |
| Lavni, girl | Wark, water | Ghodí, mare |
| Pánjai, man | Angar, fire | Bai, good |
| Zaif, woman | Aù, bread | Batar, bad |
| 1 I' | 6 she | 11 jàe |
| 2 do | 7 sat | 12 duàe |
| 3 te | 8 ashť | 13 tloe |
| 4 char | 9 no | 14 chadde |
| 5 panj | 10 de | 15 panjo |
| 16 shod | | |
| 17 sattù | | |
| 18 ashťù | | |
| 19 naù | | |
| 20 vist | | |
| Gul, river | Pà, foot | Sina, breast |
| So, atà, he-goat | Nàwad, back | Chùchađik, papa |
| Baratik, ewe | Kùch, belly | Kachi, armpit |
| Làwgà, pain | Gorechà, embrace | Dùr, face |
| Dár, wood | Sir, head | Dudà, far |
| Darù, powder | Khwagam, near | Sàmek, black |
| Phajadik, she-goat | Sàlek, white | Pelà, yellow |
| Baratà, ram | Sùnek, red | Alinà, green |
| Gal, abuse | Kachà, blue | Chàl, hair |
| Wàgan, wind | Khàt, bedstead | Chonťà, small |
| Parontik, bullet | Nùni, butter | Bàkuťà, fat |
| Mo, wine | Ave, flour | Chillà, cloth |
| Chay, vinegar | Golàng, drove of bul- | Sutàn, trousers |
| Gom, wheat | locks | Sàunim, dog |
| Lon, salt | Ađà, bull | U'ndarik, cat |
| Gà, cow | Zaib, wife | Pe, flesh |
| Ghàs, grass | Puľtem, son | Kharti, female ass |
| Panj, husband | Selt, knife | Dashnà, right |
| Wayà, daughter | Sonezarra, gold | Sur àldash, sunrise |
| Chummàr, iron | Wàđ, stone | Taj, star |
| Shlekzarra, silver | Nàst, nose | Sang, earth |
| Anch, eye | Dùr, lip | Wagh, rain |
| Khàd, ear | Jib, tongue | Sidàl, ice |
| Dàn, tooth | Brùt, mustachoes | Rast, true |
| Đađi, beard | Kalàvi, cheek, | Bo, much |
| Chagam, chin | Ling, leg | Silà, mud |
| Mandà, neck | Jeshta, ruler | Abali, cloud |
| Makađik, monkey | Ang, arm | Khurra, hoof |

| | | |
|-------------------|--------------------------|---------------------|
| Làntà, bow | Po, dust | Minai, come |
| Pachh, cotton | Bhojil, earthquake | Nepà, sit |
| Yùl, wool | Kàn, arrow | A'yà, eat |
| Sai, thing | Kàb, scabbard | Amlàjà, run |
| Tish, bitter | Sùchak, needle | Virambù, walnut |
| Sadàl, cold | Kumar, deep | Baho, quince |
| Gand, large | Lasarrà sweet | Amirik, pomegranate |
| Làgar, thin | Garm, hot | Akhud, below |
| Peràná, coat | Pinjà, flower | Pachadà, after |
| Kimanik, cloak | Dashik, grapes | Kààm, raw |
| Shuwaṭik, bitch | Aśadī, apricot | T'àdà, deer |
| Machh, fish | Manai, apple | Saro, mule |
| Kàartà, ass | Obà, upon | Avtà, hunger |
| Lawich, jackal | Ebat, now | Kostadà, shoes |
| Chappà, left | Pachaleva, cooked | Bollà, deaf |
| Nirgirsch, sunset | Shing, horn | Khotà, lame |
| Mào, moon | Ledhi, female deer (roe) | Chàyà, well |
| Tàl, heavens | Kadagà, language | Witai, go |
| I'm, snow | Tenà, thirst | Ura, stand |
| Asal, hail | Andà, blind | Pe, drink |
| Làd, false | Gongà, dumb | |
| Kam, little | Bedà, mad | |
| Lau lau jhàlà | Go slowly. | |
| Tenà nàmi kusà | What is your name? | |
| Kinà pàgi | Where are you going? | |
| Tù chùde ai | Where is your residence? | |
| Sabak mare | Learn your lesson? | |
| A'ù pachale | Cook bread. | |
| Wary achà | Bring water. | |
| Likhan kegà | Write. | |
| Emà sardàr kyàs | Who is your ruler? | |

Note. The above vocabularies seem to have been all thrown out of arrangement in the copying, but we have not time to attempt their rearrangement.—Ed.

VII.—*Note on a species of Arctonix from Arracan. By Dr. G. EVANS, Curator As. Soc. Museum.*

The singular and rare little animal presented this evening by Captain PATERSON of H. C. brig *Krishna*, I have reason to believe is the *Bali Sowar* or sand hog of the Hindus, the type of a new genus of Mammalia to which M. F. CUVIER has assigned the name of *Arctonix*. The description given of *A. Collaris* by M. M. GEOFFROY, SAINT HILAIRE and F. CUVIER, *Livraison 51ème Histoire Naturelle des Mammifères* will most probably apply to this our living specimen. It is as follows. "In habit this animal may be compared to a bear furnished with the snout, eyes and tail of a hog. Of its dentary system nothing is known, except that it possesses six small incisors of equal length, and its canine teeth are long, and that these are immediately succeeded by flat molar teeth which appear to be larger as they are more advanced in the mouth. Its movement is plantigrade, and its

five toes, united by a narrow membrane throughout their whole extent, are armed with powerful claws an inch in length.

"The hairs are rough, thickly set, and long upon the body, while those of the head are short and depressed. The snout which is flesh-colored, has only a few bristles on its sides; and the belly is almost naked. The ears are short, covered with short hairs, and bordered with white. The hair, which is yellowish white with its apex black, gives to the fur a slightly blackish cast, which varies in an undulated manner when the animal moves. The throat is yellow and the sides of the head are marked with two black bands, which unite towards the snout. The lower band which is very narrow, borders the upper lip; the other which is much broader covers the eye, embraces the ear, descends on the sides of the neck, and unites itself at the bottom of the shoulder with the black that covers entirely the anterior members: hence the part in front bounded by these black bands although nearly resembling in color the remainder of the body, seems to form a distinct portion of the fur. The hinder members are black like the anterior ones, and the hair which covers them is very rough. The yellowish white predominates towards the posterior part of the back, and the tail is furnished with large rough scattered bristles."

This description was founded entirely on the notes of the late M. DUVAUCEL, who sent from India the drawing employed by M. F. CUVIER. Mention is made that no specimen had then reached France, but that there was one in the museum of the East India Company, and that another, apparently a distinct species, is in the collection of the Linnean Society:—it continues:

'From the number and form of the toes and the disposition of the teeth the genus *Arctonix* evidently belongs to the carnivora, to the extreme of which and in close connection with the bears, it is referred by its plantigrade motion, its strong and curved claws, and its little inclination for flesh. Like the bears moreover, when much irritated it supports itself on its hind feet, and exhibits in its arms and claws weapons equally to be dreaded with its teeth; in its flat and tubercular molar tooth, its preference for vegetables and fruits, and its snout apparently destined for digging, it deviates considerably from the bears, and may therefore be perhaps regarded as the extreme of the carnivora, forming the connecting link in the series of affinities between these and the omnivorous pachydermata; which M. F. CUVIER remarks are separated from the elephants and horses, by such numerous and important characters as almost to tempt us to consider them as forming a distinct order, more closely allied to the carnivora than they are generally assumed to be by systematic writers.

Should the above detail of specific characters not exactly accord with those of the specimen now exhibited, it may be owing to its being a young animal in which the adult characters have not yet become sufficiently developed.

On looking over a file of unpublished papers transferred to the Physical Committee on its first formation I have found a manuscript description dated February 1821, of two animals in the menagerie at *Barrackpoor*, by the late M. DUVAUCEL, the first of which is evidently the animal above described by Dr. EVANS. Mr. KITTOZ has also discovered a drawing of the same animal in one of our portfolios, whence I have had the accompanying lithograph executed. It is called *Ursus* by DUVAUCEL.—J. P.

Notice, sur deux animaux du genre Ursus (LIN.) vivans à la ménagerie de Barrackpoor, 1821.

La ménagerie de *Barrackpoor* s'est enrichie nouvellement de deux mammifères qui me paraissent n'avoir par encore été décrits, et qui sont d'autant plus intéressans que l'un présente dans la disposition de ses dents une anomalie caractéristique, et l'autre, un caractère important qu'on n'a reconnue jusqu'ici que dans des animaux originaires d'Amérique.

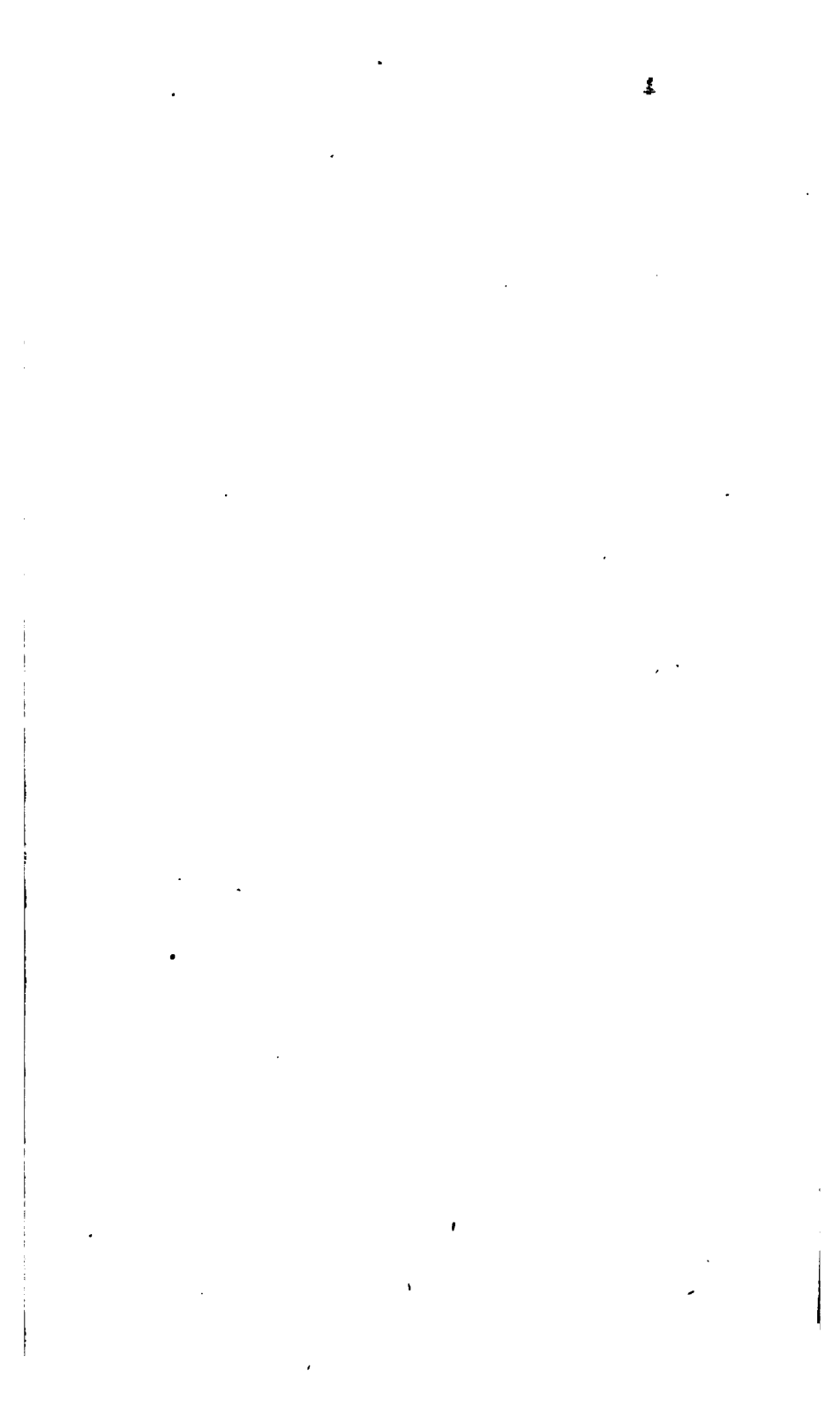
Le plus grand des deux porte à chaque mâchoire deux longues canines et six incisives. Les incisives supérieures sont une fois aussi longues que les inférieures et, parmi celles-ci, les deux moyennes se trouvent notablement plus avancées que les autres.

Les molaires, au nombre de cinq en haut et six en bas, paraissent avoir une forme et une disposition semblables à celles de l'*Ursus gulo*, (LIN).

Sa hauteur est d'environ 19 pouces : il a le port des ours, avec le museau, les yeux, et la queue, des cochons. Ses oreilles sont courtes et toutes velues ; ses pieds indiquent une marche plantigrade et ses cinq doigts, unis dans toute leur longueur, sont armés d'ongles vigoureux, surtout aux pieds de devant où ils ont plus d'un pouce de longueur.

Le poil du corps, rude, long et très fourré augmente considérablement son volume. Celui de la tête est court et serré. Le museau, couleur de chair, est seulement garni de quelques soies sur les côtés, et le ventre est presque nu.

Ce poil, d'un blanc jaunâtre, avec le bout noir, donne au pelage entier un reflet noirâtre qui varie quand l'animal se meut. La gorge est jaune ; et, sur les côtés de la tête, sont deux bandes noires qui





s'unissent vers le museau. L'inférieure très étroite borde la lèvre supérieure; l'autre beaucoup plus large couvre l'œil et va se perdre derrière l'oreille largement bordée de blanc.

Le poil qui couvre les membres est d'un noir pur et d'une nature plus rude que celui des autres parties; le blanc domine vers la partie postérieure du dos; et la queue, longue d'environ 9 pouces, est garnie de longues soies blanches semblables à celles des cochons ordinaires.

La conformation extérieure de cet animal ne laisse aucun doute sur le genre auquel il appartient; mais ses dents auraient besoin d'être soumises à un examen plus sévère que le mien pour fixer sa véritable place dans les subdivisions rigoureuses établies par l'anatomie. (STORR. *Prodromus methodi Mammalium*, 1780).

L'espèce avec la quelle il a le plus de ressemblance extérieure est le *glouton du nord*, *Rossomak* des Russes ou *ursus gulo* de LINNÆUS; et, si je ne me suis point trompé dans l'inspection de ses mâchoires, on doit d'autant mieux réunir ces deux animaux, que celui de *Barrackpoor* porte aussi sous la queue, comme l'*ursus gulo*, une sorte de poche formée par un large pli de la peau interfémorale.

Les mœurs de cet ursus paraissent ne différer en rien de celles de la plupart des autres du même genre: il passe une partie du jour dans une somnolence profonde et préfère l'obscurité à la lumière. Sa démarche est lourde, lente et pénible; mais il se dresse avec facilité sur ses pieds de derrière, se sert avec adresse de ceux de devant, et trouve dans ses bras et ses ongles des armes non moins dangereuses que ses dents.

Ses dents peu tranchantes nécessitent un régime frugivore, et en effet il préfère les végétaux à la chair.

Quoique farouche et méchant, l'individu femelle vivant à *Barrackpoor* fait croire, par son analogie avec l'ours ordinaire, que son espèce est susceptible d'éducation et peut-être serait-elle depuis longtemps au nombre des animaux domestiques, si sa grande ressemblance avec le cochon, ne la faisait considérer ici comme une espèce immonde?

La longueur et la mobilité de son museau indiquent l'habitude de fouir et ses ongles vigoureux lui servent sans doute à creuser la terre. Cette hypothèse est d'autant mieux fondée que l'animal, dans les contrées où il vit, est connu des natifs sous le nom de *cochon de sable* (bali-souar).

VIII.—*Translation of an Inscription on a Tām̐ba Patra found in the Village of Pipliānagar, in the Shujalpur Pergana, and presented to the Political Agent, Bhopal, by the Jagirdār. By L. WILKINSON, Esq. Pol. Agent.*

[In a letter to the Editor.]

I owe you many apologies for the delay which has transpired in forwarding to you copies and translations of the three remaining Tām̐ba patras found at Pipliānagar in 1836. I have now the pleasure to forward a copy and translation of the oldest dated in *Samvat* 1235.

It seems to throw some doubt on the course of succession that appeared to you to have been rendered plain and clear, for eight generations, by the inscription dated *Samvat* 1267 before submitted to you. That inscription states that JAYAVARMA was succeeded on the *gaddi* of Mandap (or Mandu) by his son VINDHYAVARMA, and he by his son AMUSHYĀYANA and he again by SUBHASAVARMA, and this last rāja by his son ARJUNA; whilst this states that HARISCHANDRA succeeded rāja JAYAVARMA, and adds moreover in the last verse that he was the son of LACSHMIVARMA.

This discrepancy may be reconciled by supposing that rāja HARISCHANDRA was only a prince of the royal family and as such became possessed of an appanage and not of the whole kingdom: and the fact that *Nilagiri* and not *Mandap* was his capital seems to confirm this supposition, supported as it also is by the title of *Mahā Kumdra* or prince given to him.

I was about to add translations also of the other two inscriptions: but finding that they both correspond word for word with that formerly sent to you in all respects but the dates—(which are later—the one only by three and the other only by five years—than that of the former inscription)—and that they both record grants by the same rāja ARJUNA, translations of them would be but an idle repetition. I enclose however copies of both, which you may place on record, if you can afford to spare a space for them in your journal.

Sehore, 27th August, 1838.

॥ श्रीः ॥

॥ श्रीगणेशायनमः ॥

॥ स्वस्ति जयोभ्युदयश्च ॥ जयति व्योमकेशोसौ यः सर्गाय विभर्षि
तां ॥ ऐदंवी शिरसा लेखां जगद्गोत्राङ्कुराकृतिं ॥ १ ॥

तन्वन्तु नः स्मरारातेः कल्याणमनिर्गमं जटाः । कल्याणतममयोद्दाम
तद्विद्वज्यपिकृताः ॥ २ ॥

परमभट्टारकमहाराजाधिराजपरमेश्वर श्रीउदयादित्यपादानध्यात
परमभट्टारकमहाराजाधिराजपरमेश्वर श्रीनरवर्त्मदेवपादानुध्यातपर
मभट्टारकमहाराजाधिराजपरमेश्वर श्रीयशोवर्त्मदेवपादानुध्यातपरम
भट्टारकमहाराजाधिराजपरमेश्वर श्रीजयवर्त्मदेव इत्येतस्मात्पृष्ठतमप्र
भोः प्रसादादवाप्तनिजाधिपत्यः समस्तप्रशस्तोपेतसमधिगतपञ्चमहाशब्दा
कङ्कारविराजमानमहाकुमारश्रीहरिचन्द्रदेवः नीलमिरिमच्छक्तेमहाप
प्रतिजागरणके संवत्पञ्चसवाढायामनिवासिसम्भतियामनिवासिगच्छ
समस्तराजपुत्रविविधिके पट्टकिजजनपदादिप्राप्त्योत्तरान् बोधयत्यस्तु
वः संबिदितं यथा ऽस्माभिः श्रीविक्रमकाशातीत १२३५ पञ्चत्रिंशदधिक
द्वादशशतसंवत्सरान्तःपातिपौषवदि अमावास्यायां संजातसूर्यपर्वणि
चतुर्मुखमाङ्गल्येश्वरदेवोपकाङ्क्षेविमलतरपवित्रगर्भदातोर्धामेभिः आ
त्मा सितवाससी परिधाय देवविमनुष्यपिटृन् सन्तर्प्य चराचरगुरुं भग
वन्तं भवानीपतिं समभ्यर्च्य समित्पुत्रतिजाम्राद्याऊतिभिर्हिरण्यरेतसं
ऊत्वाजातवेष्ट्यं विधाय कपिलां त्रिःप्रदक्षिणीकृत्योपसृष्टमोसहस्रनाम
महादानं दत्वा च संसारस्यासारतां दृष्ट्वा नलिनीदलगतजलविन्दुवक्षश्च
क्षतरं यौवनं वित्तं चावेक्ष्य ॥ उक्तञ्च ॥ वाताम्बविभ्रममिदं वसुधाधि
पत्य मापातमात्रमधुरोविषयःप्रभोगः । प्राञ्जालुत्वायजलविन्दुसमा
गराणां धर्मः सखा परमहो परलोकयाने ॥ १ ॥

इत्येवमाकलय्य ॥ मातापित्रोरात्मनश्च पुण्ययशोभिवृद्धये कात्यायन
मोत्राय त्रिप्रवराय पण्डितसिंहसूतपण्डितदशरथशर्मणे विनिश्चित
यटसवाढायामस्यांशद्वयमङ्केश २

तथा १२३६ घट्टिंशदधिकद्वादशशतसंवत्सरान्तःपातिवैशाखमासि

बौद्धमास्यां पराञ्जरभोधाव त्रिप्रवराय पण्डितदेवसुतपण्डितमासूये
धर्म्मार्थे ब्राह्मण्यार्थमेकमर्कं ८ श १

गुणपुरदुर्गंतकदृष्टिकावासनिकायुक्तमित्त्वभयमंशम् एवमंशत्रयोपक
व्यितोनीकत्रिरिमख्यवीथकुडवमाप्येवचत्वारिंशन्मानिकापरिमित उभ
दिनिखितसवाडायामः सवृक्षमाकाकुबोनिधिविद्येपसहितरुतुःकण्ड
विशुद्धोवापीकूपतडागोपयुक्तः । सर्वाभ्यन्तरसिद्धाससनेनोदकपूर्वकतया
प्रदत्तः । तत्रच ग्रामनिवासिपट्टिकादिजोकेषुथाकर्षकैश्चात्रग्रामे
वथेत्यद्यमानभागभोगकरद्विरष्टादिकमाद्यावाग्विधेयैभूत्वा सर्वमनयोः
समुपनेतयां सामान्यंचैतत्पुण्यफलं बुधास्त्रयंशजैरेनैरपिभाविभोक्तृभि
रस्मत्प्रदत्तधर्मादायोयमनुमन्तव्यः पातनीयश्च । यत्ते । वज्रभिर्वसुधा
भुक्ता राजभिः सगरादिभिः । यस्य यस्य यदा भूमिस्तस्य तस्य तदा
फलं ॥ १ ॥

भूमिं यः प्रतिगृह्णाति यश्च भूमिं प्रयच्छति । उभौ तौ पुण्यधर्म्मार्थौ
निवर्तं स्वर्गमाप्नुयौ ॥ २ ॥

अष्टमंभ्रातृसत्तं कर्त्तुं वरान्धं वरवाहनं । भूमिदानस्य चिह्नानि कथमे
तत् पुरन्दर ॥ ३ ॥

हर्त्ता हारयिता भूमेर्मेन्दुवृक्षस्तमोवृतः । स वज्रोवाहजैपात्रैस्त्रिं
शोभिःप्रजायते ॥ ४ ॥

सदत्तां परदत्तां वा वो हरेन्न वसुन्धरां । वष्टिर्वर्षसहस्राणां विष्टा
यां जायते क्षमिः ॥ ५ ॥

सुवर्धमेकं ग्रामिकां भूमेरप्येकमंशं । हरन्नरकमाप्नोति वावदाभूत
संज्ञवं ॥ ६ ॥

वीथ्याञ्जरतिदानानि गावः पृथ्वीसरस्वती । आसप्तमंपुनर्येता दोह
वाहनिवेदनैः ॥ ७ ॥

यानीहदत्तानि पुरानरेन्द्रैर्दीनानि धर्म्मार्थ्यप्रस्कराणि । निर्मात्य
वान्तिप्रतिमानितानि कौणामसाधुः पुनराददीत ॥ ८ ॥

सर्वानेतान् भाविनः पार्थिवेन्द्रान् भूयोभूयोयाचते रामचन्द्रः । का
मान्द्योयं धर्मं सेतुर्दृष्टपादां काके काके पादनीयो भवद्भिः ॥ ८ ॥

महंशजाः परमहीयतिवंशजा वा पापान्निवृत्तमनसो भुविभाविभू
याः । ये पादयन्ति ममधर्ममहीं तु तेषां पादारविन्ददुग्धं शिरसा
नमामि ॥ १० ॥

हस्तार्थैयवचनक्रममवजंश । इति कमलदक्षांबुविन्दुषोऽन्धियमनु
धियमनुज्जीवितं च । सकलमिदमुदाहृतं च बुद्ध्वा नहि पुनर्यैः पर
कीर्तयो विज्ञेयाः ॥ १ ॥

इति । सहस्रोयं महाकुमारजीवन्शीवर्त्मदेवसुतमहाकुमारजीहरि
चन्द्रदेवपरमारकुलकमलकमलवन्द्योः ॥ श्रीरक्तु ।

॥ हस्ताक्षर रामचन्द्रजा ॥

Translation.

[Glory be unto SRI GANESA.]

1. Happiness, victory and prosperity. Glory be to SIVA, who wears on his head the crescent moon as the seed whence this world has sprouted forth.

2. May the tresses of KA'MADEVA's enemy (SIVA) ever afford to us happiness and salvation; as they shine forth in splendour like the lightning at the grand deluge.

3. The mighty king Mahārāja Adhirāja SRI UDDYADITYA was succeeded by the mighty Mahārāja Adhirāja SRI NARA VARMA DEVA, he by SRI YASOVARMA DEVA, and he again by SRI JAYA-VARMA DEVA; by the favor of this last mentioned rāja, the learned and accomplished Prince SRI HARISCHANDRA DEVA, received dominion. He hereby from his capital of *Nilagiri* notifies to the Government officers, the inhabitants, the *Patèls*, brahmans and others of the villages of *Mamati*, and *Sawáru* (or *Palasawárá*) of the *Madápadrá* pergunna, and be it accordingly known to you, that on the occasion of the eclipse of the sun which has occurred in the new moon

of Panshavádya of the Samvat year 1235 of VIKRAMADITYA, he after bathing in the sacred waters of the holy *Narmadá*, near the temple of the four-faced MARKANDESVAR, and after duly robing himself in white garments and making oblations of water to the gods and to his progenitors, and after offering due worship to the lord and ruler of all animate and inanimate objects, and after sacrificing to the sacred fire with the holy wood, kusha grass, sesamum seed, rice, &c. as prescribed, walking thrice round the sacred cow, and performing other purificatory ceremonies, has given away in gift 1000 cows. Seeing moreover that there is no stability in the affairs of this world, that they are more inconsistent than the water-drop trembling on the lotus leaf, and that youth and wealth are of uncertain duration, as it has been well observed, "the kingdoms of this world are as inconstant as the clouds agitated by the changeful winds, and all sensual pleasures last but for the instant of enjoyment; the life of man is like the rain drop depending from the point of a tremulous blade of grass; piety alone will befriend a man in the life to come,"—I, duly reflecting on these matters, have, with a view of adding to the merits and glory of my mother and father and of myself, given to the learned brahman DASARATHA, son of the learned SINDHU of the *Kátyáyana gotra* and of three Pravars, two shares of the registered rents of the village of *Sawárá*. To the learned brahman MALVINU the son of the learned DELU of the *Parásara gotra*, and of three Pravars. I moreover gave on the full moon of Vaisákha of the above mentioned Samvat year 1235, the remaining share of the village, adding to the shares of both customary dues from the bazar below the Fort of *Gunapura*; the village of *Sawárá* thus divided into three shares and calculated at 40 manis of seed grain as measured by the kura of the *Nilagiri Mandala*, together with all the trees growing therein and a right to all trove treasure that may be found, with its clear defined boundary, and with all the *Baolees*, wells, and tanks in the same, has by this deed been duly granted with ablutions of water. Therefore let all the inhabitants of this village, the *patel* and others as also the cultivators, submitting themselves to the orders of these two pandits, pay unto them the whole produce of every due, rent, revenue and money payment.

Let this my religious grant be duly observed and maintained by all my descendants and also by all other future priuces who may inherit the land, reflecting that the merits of the gift will thus be duly shared in by them whilst following this course.

1. The earth has been enjoyed in succession by many kings, by *rāja*

SAGARA and others. The reward of religious merit attaching to grants of land is participated by all maintaining those grants inviolate.

2. He, who receives a grant of land and he who gives the same, are alike meritorious and are certainly inheritors of the kingdom of heaven.

3. O, INDRA ! A gift of land is held to be complete in all its parts, when accompanied by a conch shell, a seat of honor, a *chhatra*, a good horse and a good carriage. They are the signs of a perfect gift which is enjoyed when accompanied by these.

4. The fool, who yielding to the instigations of his evil passions, resumes a grant of land or causes a grant to be resumed, will be bound in the chains of Varuna, and in a future birth will be born a bird or quadruped.

5. He who resumes land given either by himself or others will become a vile worm creeping in ordure for sixty thousand years.

6. He who seizes a single gold coin, or a single cow or even a finger's breadth of land, goes assuredly to hell there to abide so long as this creation shall last.

7. Gifts of cows, of land and of knowledge are called grand gifts ; these purify to the seventh generation, by the milk, fruit, and information they impart.

8. What man of virtue can be found so base as to resume the grants of former rajas, who acquired thereby as well religious merit, as their worldly desires and glory. Such resumption is as the returning to a vomit, or the claiming of what has been once offered to a deity.

9. RÁMACHANDRA thus again and again calls upon all future rajas, "Bear steadfastly in mind, that the merit of maintaining, is equal to that of making grants, that it will prove your eternal salvation ;" that grants should therefore be, from generation to generation and at all times preserved inviolate.

10. To all princes whether descended from me or from other kings, who free from all sin, maintain the grants of land made by me, inviolate, I humbly bow my head, and kiss their lotus feet.

Such are the sacred texts of Rishis rehearsed in order.

Let all men reflecting that prosperity and life are as uncertain as the trembling waterdrop on the lotus leaf, bear these examples and warnings in mind and forbear to impair the good names of others.

Given under the signature of the Prince SRI HARISCHANDRA DEVA (son of the great SRI LACSHMIVARMA DEVA), who befriends the Paramár (Ponwar) tribe as the sun befriends the lotus.

IX.—*Proceedings of the Asiatic Society.*

Wednesday Evening, 5th September, 1836.

The Honorable Sir EDWARD RYAN, President, in the chair.

Sir GRAHAM C. HAUGHTON, proposed by the Secretary in the Committee of Papers was, upon their concurrent recommendation, elected an honorary member of the Society.

Lieut. J. DUNCAN, *Heshangabad*, was proposed as an ordinary member by the Secretary, seconded by the President.

Mr. JOHN BLACKBURN, assistant Editor of the *Englishman*, proposed by Mr. STODOLER, seconded by Babu PROSONOONAR THAKUR.

Dr. HELFER, M. D. was proposed by Mr. J. W. GRANT, seconded by the Secretary.

The Secretary reported that Mr. DE VINNE, Financial Secretary, S. B. S. had paid over Mr. MUIN's donation of 1000 Sicea rupees, Co.'s Ra. 1,066 10 8.

A letter from Major TROYER forwarded through the Secretary at the India house, the gold medal awarded to Mr. HODGSON by the French Asiatic Society.

Resolved to dispatch it with permission under Government frank to *Nipal*.

Library.

The following books were presented :

The *Mahawanso*, in Roman characters, with a translation, and an Introductory Essay on Pali Buddhistical Literature, *Ceylon*, 1837, vol. the 1st—by the Honorable GEORGE TURNOUR, Esq. *Ceylon Civil Service*.

Rise and Progress of British Power in India. By PETER AUER, M. R. A. S. London, 1837, vol. the 2nd—from the *Honorable Court of Directors*.

Debate in the House of Commons on the motion for 'a select Committee to inquire into the allegations contained in the petition from *Madras* and *Calcutta* on the subject of Act XI. of 1836.'—by *ditto*.

Illustrations of the History and Practices of the Thugs. London, 1837—from *ditto*.

The *George Namah* of MULLA FERUZ BIN KAWAR, chief priest of the *Parsi* kadmis of *Bombay*; (in Persian), *Bombay*, 1837, 3 vols.—by MULLA RUSTAM KHAN KAKORAD, nephew of the author and editor of the work.

Rules of the *Bombay Geographical Society*, instituted April, 1831. *Bombay* 1836.

The Proceedings of *ditto*, 1836-7—from the *G. Society*.

KYRTON's Illustrations of Indian Architecture, 1st Number—presented by the Author.

Astronomical observations at *Madras* (second copy) from Government through Gen. Sir W. CASEMENT, Secretary in the Military Department.

Meteorological Register for July—from the *Surveyor General*.

Oriental Publications.

A letter from the Secretary to the Government of Bengal, dated 15th August, intimated that the Honorable the Deputy Governor had sanctioned a subscription for 40 copies of volume I. of Mr. TORRENS' translation of the *Alif Leila*, at 8 rupees per copy.

With regard to Mr. HODGSON's *Nipal Zoology*, the Deputy Governor of Bengal was of opinion that as the work was to be published in England, the application for patronage should be addressed to the Honorable Court of Directors; which was accordingly resolved to be done through Sir A. JOHNSON, V. P. Roy. Asiatic Society.

The Secretary read the report of the special Committee on the expediency of publishing the *Sarira Vidya*, or rather the separate minutes of its members in support of their former report.

Minute by Dewan RAM COMUL SEN.

There are two questions before the Committee, the first is whether the HOOSEN's Anatomist's *Vade Mecum* should be printed in the Sanskrit or the vernacular lan-

guage? and the second whether publications of similar works would be more useful and would contribute more to the instruction of the people in a vernacular tongue than in the Sanskrit.

With regard to the first my opinion is that the Vade Mecum should be published in Sanskrit for the following reasons.

1st. The work has already been translated into Sanskrit, and prepared for the press, paid for by the Education Committee, and 32 pages have already been printed.

2ndly. This is one of the works transferred to the Asiatic Society, which has engaged to complete it.

3rdly. When the Asiatic Society applied for aid from Government to finish the work, it never had it in contemplation to publish it in the vernacular language.

4thly. The Sanskrit is read in several parts of India, where there are many thousand *Vaidyas* practising in medicine, a considerable portion of whom are versed in Sanskrit, and who will find the work useful and read it to help themselves in becoming acquainted with the European system of Anatomy.

5thly. Until the natives are put in possession of the means of learning this system through the language they are familiar with, it will never be successfully cultivated among them, and it is believed that this work with plates and illustrations if rendered into Sanskrit will be a preparatory step towards the accomplishment of that object.

6thly. The learned and scientific class of the people of India has a prejudice against the vernacular tongue, through the medium of which they cannot be easily induced to learn a foreign science, however beneficial and instructive it may be.

7thly. Mr. MURK has made an offer of one thousand rupees for the work, on condition that it should be published in Sanskrit: from this it appears that he must have ascertained the feeling and opinion of the people for whom the work is intended.

8thly. The work will be useful to the cause of education and read with success by the Sanskrit classes in the public Colleges of *Calcutta*, *Benares*, *Agra* and *Delhi*, where there are still several hundred young men, studying Sanskrit. To these students it will be a valuable acquisition, as it will greatly help them in learning the system of Anatomy.

9thly. MONOOSODON GOOPRA, who has translated the work appears to be very anxious that his labor should not be lost to his countrymen. This is I believe the first medical work that has ever been translated from English into Sanskrit, and if the wish of the translator is not realized, it will in future deter others from similar attempts, and at the same time damp the spirits of enterprising men desirous of undertaking works of a similar nature.

10thly. The Missionaries of *Serampore* published some time ago a complete system of Anatomy called *Vidya Harabulī* in the Bengali language, but for the reasons stated in Para. 6th, it has met with a very indifferent reception. The work did not sell even to so much as to exonerate the publishers from the printing charges.

With regard to the 2nd question, I think the fund at the disposal of the Asiatic Society should not be confined to the publication of works of one particular language or subject, but its benefit ought to be held out for the encouragement of the learned natives, and the preservation and cultivation of the languages of *Asia* of which Sanskrit and Arabic are the two most learned in *Hindustan*, and translations from European science in these languages would be desirable.

Books calculated for school purposes printed in the vernacular tongues, used in different parts of the country no doubt will prove more useful than Sanskrit or Arabic, and conduce more to the instruction and improvement of the natives. If they are in a form and of a nature suitable to their taste, and capacity and state of reading amongst them and the state of society.

As for the term vernacular language, I do not understand what is meant by it. If it is meant to be Bengali it is understood by the people inhabiting the country which comprehends *Rajmehal*, *Orissa*, *Chittagong*, *Assam* and *Mithila*. But a considerable portion of the language is intermixed with Sanskrit, and when a work written in that language is of a scientific character, it must require a pandit to explain its meaning. If it is meant to be Hindi a term by which languages spoken in *Behar*, *Lucknow*, and *Agra* is called; it must come under the head of *Urdu*, *Hindi*, or *Hindustani*.

The Hindi which is a degeneration of words derived principally from the vernacular language*, is very poor and incapable of interpreting any difficult and scientific

* By Hindi is meant the vernacular written in *Nāgarī*, which differs so far from the Persian-written *Urdu* that its reading is confined nearly to Hindus; and abstract terms borrowed from Sanskrit or rather *Prākrit* will in it take the place of the Arabic

tific subject, without borrowing a considerable portion of words from *Urdu*, two-thirds of which consists of Arabic and Persian words.

The state of literature in those parts of the country where these languages are spoken is not yet such, as to be expected that the people would derive much benefit from books similar to the medical *vade mecum*. The great mass of the people cannot read works like these with proportionate benefit without a previous acquirement or knowledge in the Sanskrit, Persian or Arabic language. But a vernacular version from such works may be useful and prove advantageous only in colleges where medical science is taught; but it will be necessary for the aid of the *munabi* or a *pandit* to learn it.

RAM COMUL SEN.

13th August, 1838.

Minute by Dr. N. WALLICH.

I am clearly of opinion that there ought to be correct versions in the two classical languages of the East, of at least the elementary works in sciences; were it only for the purpose of fixing the nomenclature on some sort of sound basis. Speaking of Sanskrit, I believe I am right in asserting, that the language is understood to be fully capable of expressing or rendering every possible term of science, that has any meaning at all. I therefore adhere to the opinion already expressed by our Committee that MADHUSUDAN's translation should be published in the manner we have recommended.

With regard to versions of works of this nature into the vernacular languages, I cannot help considering the matter as being of such obvious importance as scarcely to admit of a question or a doubt. But still I would say let us have accurate Sanskrit translations in the first instance; it will then be safe—I had almost said possible to have accurate versions in Bengali,—for I presume that is the vernacular language to which Mr. PRINSEP alludes.

With every deference to Dewan RAM COMUL SEN's opinion, coming as it does from a first-rate Sanskrit scholar (the only Sanskrit scholar among us) and author of one of the best English and Bengali Dictionaries extant, I must suppose, that the reason alleged for the *Vidya-hara-buli* not being much used is not the only, perhaps not the chief one.

N. WALLICH.

Minute by Dr. H. H. SPRY.

Dewan RAM COMUL SEN's reasons are I think all cogent; and being at this moment engaged in a statistical investigation into the state of education in Hindustan I can show by the aid of figures that there are only two languages known in Hindustan through the instrumentality of which the translation of any work of *European science* can hope for success. Learning, as all must know, is in this country, limited by the peculiar grade in which the individual happens to be born, and there is in consequence, no mutual connection between the vernacular and learned schools. Boys in this country do not go first to the preparatory school or academy and afterwards to the college, but these institutions are two separate schools, each existing for a perfectly distinct class of Society—the one for the trading and agricultural community, and the other for the religious and learned classes. Indeed so carefully is this distinction observed by the Hindu population that the children of the latter class are seldom, if ever, permitted to attend the village vernacular school, but such preparatory instruction as is requisite, before sitting down to Sanskrit, is given under the parent's own roof. Again, the Hindu vernacular schools never profess to afford instruction beyond the mere knowledge of keeping accounts accurately, while the masters themselves are more than half ($\frac{2}{3}$ $\frac{1}{3}$) of the inferior (*Kayastha*) or writer caste; and what is still more to the point there are in Lower Hindustan alone no fewer than five distinct vernacular dialects—viz. Bengali, Hindi, Uriya, Trihutiya, and Persian with Urdu. In *Behar* and *Shahabad* the second of these tongues is in general use, but it differs very much from the Hindi of *Patna*, while the Marwaris speak a dialect of the Hindi language not less different from that of *Patna* than the dialect of *Bhojpur* is, and with the Musalmans, Persian instruction is the only substitute for vernacular instruction except in cases in which Mussalmans resort to Bengali and Hindi schools; and although the Hindustani or Urdu is the current spoken language of the educated Musalmans of Hindustan, it is a remarkable feature in the constitution of Muhammadan Society in *Behar* and Bengal that it is only known colloquially;—it is never employed in their schools but to give oral instruction in Arabic. In a total of 1459 vernacular schools in Lower Hindustan,

or Persian terms so abundantly introduced in the other by its Musulman penmen or by Hindu writers bred up in the atmosphere of a Muhammadan court, or of the courts of justice hitherto conducted in Persian.—ED.

968 are without any written books of instruction of any kind,—the ultimate object of this species of instruction being to teach accounts. To render a scientific book such as HOOPEK's *Vade Mecum* into one or all (and if vernacular be adopted all will claim alike) of these vernacular dialects would therefore be a waste of time and money.

On the other hand, although it be true that Sanskrita is open to a certain extent to all classes of native society, yet in reality it is exclusively confined to the brahmins, and is essentially the language of Hindu learning; for it was found, that, in the whole extent of the country visited by the late survey, as well as that made known to us by Dr. HAMILTON, that with the exception of five physicians the Sanskrit teaching was a brahminical monopoly; while out of a class of 153 students in the *Moorsheadabad* District, one only was a *Kayastha*,—of 393 in *Beerbhoom* only nine were of the *Vaidya* or medical caste;—three of the *Vaishnava* or followers of the *Chaitanya* and one a *Daivagna* or outcast Brahmin; in *Burdwan* out of 1358 students 45 were *Vaidyas*, 11 *Daivagnas*, six *Vaishnavas*, making a total of 76 while all the rest were brahmins. My opinion therefore is that until English Normal Schools of learning can be sufficiently established whereby the young men of this country can study the science and literature of England in its original form, all works partaking of the character of the one now under discussion should be rendered into the two learned oriental languages, viz. Sanskrita and Perso-Arabic, and that translations for the use of the vernacular schools should be confined to books fitted to the wants of the class of boys who frequent these seminaries.

HENRY H. SPRY, M. D.

Minute by Professor O'SHAUGHNESSY.

I think a small portion of the funds of the Asiatic Society may be advantageously devoted to the publication of the Sanskrita version by MADHUSUDANA GUPTA of HOOPEK's *Vade Mecum*, improved and amended, as formerly suggested. The translation is ready and only requires illustrations and a few additions,—it is paid for—Mr. MUIR's munificent donation applies only to a Sanskrita volume—there exists a large class of individuals learned in that tongue who are represented by the Dewan RAM COMUL SEN as ready to read the proposed work. These facts appear to me sufficient to warrant our applying the funds of the Society in the proposed manner.

Had not a version of HOOPEK's work been already made and paid for I would much prefer one of Dr. SOUTHWOOD SMITH's "*Philosophy of health*," the most interesting, intelligible and instructive popular work on physiology, which has ever been published. Its illustrations are admirable, its size duodecimo. The work was published in 1837 in order to communicate to the educated classes in England, as much knowledge of the Science of medicine as would enable them to see through the impostures of the MORISONS and St. JOHN LONGS. I have no doubt but that it would be studied with avidity by the Sanskrita scholars of India; and that the powerful though simple reasoning which pervades its pages, would force true knowledge on many a mind.

A work on *pure anatomy* cannot be so useful, especially to the hereditary physicians of the Sanskrit School, inasmuch as they will not have recourse to the *practical anatomical studies*, which alone can render the volume instructive to any material degree. The proposed illustrations will lend, however, a little intelligibility to the work, and for this little I am willing that the proposed expenditure be made.

As a complete work on anatomy already exists in Bengali, the question of publishing HOOPEK's "*Vade Mecum*" in that language instead of Sanskrita is of course set aside. And I do not agree with the Dewan RAM COMUL SEN as to the causes of the *Vidya Hara boli* having proved unsaleable. I think it was simply because no medical school taught in the Bengali language, was in existence. When secondary classes spring up, as please God they soon will, in which our normal pupils will spread the instruction we are now imparting to them, through the English language, then the *Vidya Hara boli* will be of inestimable advantage. I would respectfully suggest to the Society, as a measure worthy of their attention that they secure the preservation of the remaining copies of this work in anticipation of the rapidly approaching period when they will be rendered available.

With reference to a version of this or any similar work in *Urdu*, I do not think it at present required, because there is no class of students prepared to profit by it. A class, I trust, will soon be formed, and then the advantages of such a version will assume a practical shape, intelligible even to my good friends on the sub-committee, who affect to doubt the existence of the Hindustani language. They ought on precisely equivalent reasons to deny the entity of the English tongue, and pro-

pose that all our schoolboys should receive the rudiments of knowledge from the unadulterated sources of the Celtic or the Norse.

As to the aid derivable from Sanskrita in the versions of technical terms there is much more unanimity among all parties than they are themselves aware of. Our friend RAM COMUL SEN, if called on to translate the "membrane" of "JACOS" or the "Eustachian" "tube," would leave the *proper names* as they stand and adopt the equivalent term to be found in every language for the *thing* denoted. If speaking of "Oxygen" which was baptized before its properties were investigated, and the meaning of the name of which is now known to give an erroneous notion of its nature, in such a case instead of multiplying error by *translating* the name I presume RAM COMUL SEN would *transfer* the word as a conventional term. Look at "Narcotine" so called because its discoverer fancied it was the narcotine principle of opium. We now find that it possesses no such properties, but is a powerful febrifuge, like quinine; what will RAM COMUL SEN propose in such a case?—of course not to *translate* the name but to *transfer* it as it stands.

The illustrations of whatever work may be decided on may be obtained very cheaply and quickly by application to Professor QUAIN, Mr. PAXTON or Dr. SMITH. These gentlemen of course preserve the blocks, and I am convinced will gladly permit the required copies of the plates to be struck therefrom, for publication in the *oriental* languages, on being requested to do so by this Society.

W. B. O'SHAUGHNESSY.

30th August, 1838.

Minute by G. EVANS, Esq.

The very limited acquaintance with the languages and literature of India which I possess, renders it a matter of some difficulty for me to offer an opinion upon a question on which I am far from being qualified to decide, and regarding which there also appears to be some diversity of sentiment.

The advancement and diffusion of medical and other European knowledge amongst all grades and conditions of the natives of India, are unquestionably objects of paramount importance, such indeed as merit the serious consideration of every enlightened and well disposed mind: it becomes therefore a matter of great moment to determine on the means best calculated to ensure their most extensive and permanent success, not only in medicine, but in every branch of science, and it is to these considerations that our endeavours, unbiassed by favorite pursuits, should be mainly directed.

Sanskrit is the fundamental, and one of the classic languages of the east, and as such its study should be scrupulously upheld and warmly advocated by all who take an interest in the affairs and polity of the vast empire over which we rule and preside.

The question the Committee is called on to express its unqualified sentiments upon, is whether the medical work, selected for publication in one of the native languages, should be translated into the Sanskrit, or into the vernacular tongue. The arguments advanced against the latter by Dewan RAM COMUL SEN, coming as they do from a learned Sanskrit scholar, demand every consideration; many of his objections do not admit of denial, but I think they ought at the same time to be received with certain limitations. The fittest medium for the diffusion of medical instruction, in my humble opinion, appears to be the Urdu, a language compounded of Sanskrit, Bengali, Persian, Arabic, Hindi and into which English itself has now been introduced,—printed in this language, the instruction intended to be conveyed, would at once become accessible to all classes of natives, which I opine is the grand object in view, whereas, if *alone* confined to the Sanskrit, the work would be useful only to Sanskrit scholars and the knowledge that it must impart, would in reality be merely a monopoly in the hands of a few pandits to the total exclusion of the less learned though not less indifferent inquirers after knowledge. With this impression I would therefore suggest the propriety of selecting in the first instance, the Urdu, and as time, talent and money have already been spent on a translation into Sanskrit, and there is a further provision in the liberal gift of Mr. MURR, for the specific purpose of publication in the Sanskrit, I would further recommend that the original design be implicitly acted up to by having a translation also into that language.

August 31st.

GEO. EVANS.

[Dr. EMMETON had not recorded his opinion.]

The PRESIDENT explained to those of the numerous members, who had not attended at the last meeting how the question had come to be referred back to the Committee. Their present minutes unanimously confirmed their first report recommending the publication, and it appeared only necessary to put it to the Society, whether the report should be adopted and carried into effect, or otherwise.

BABU PHOSONNO COMAR TAGORE adverted to the condition on which the books had been transferred to the Society, and proposed, seconded by Mr. CHACROFT:

"That, as it appears that by the letter of Government the Society are bound to publish all works handed to them for publication, no discretion is left to us in the matter, and the publication of the work should therefore be proceeded with."

The Secretary explained that although the general object of the transfer of the books was their publication, yet no obligation was implied, inasmuch as some of them (Dr. TYTLER's translations for instance) could not now be completed.

Mr. G. A. PAINSE, proposed an amendment, seconded by Col. McLEOD, which was carried by a large majority:—

"That this Society approve the report of the Select Committee, dated 31st July, 1838, confirmed by the minutes just read, and proceed to act thereon."

The following letter was read from Mr. J. C. C. SUTHERLAND, Secretary to the Committee of Public Instruction, announcing a prize of 100 rupees offered by Mr. J. MUIR, for a Sanskrit metrical essay, '*On the divine power, wisdom and goodness as exhibited in the creation.*'

To J. PAINSE, Esq., Secretary to the Asiatic Society.

SIR,

Mr. MUIR has sent to the General Committee one hundred rupees (Co.'s Rs. 100) as a prize for the best metrical essay "*On the divine power, wisdom and goodness, as exhibited in the creation.*" It is subject to these conditions.

1st. Competitors are to be the Professors and pandits of the Calcutta Sanskrit College, Benares Sanskrit College, Agra College, Delhi College, Bishop's College and Asiatic Society.

2nd. The number of slokas is to be about 100.

3rd. The measure is to be one of the following metres, *Indravajra* and *Upajati*.

4th. The illustrations are to be derived from European systems of science, many hints of which are contained in the *Padārtha Vidyāsāra* of which copy is enclosed.

I am, &c.

Fort William, August 4, 1838.

J. C. C. SUTHERLAND,
Secretary to G. C. P. I.

The Secretary reported that he had had the letter translated into Sanskrit and placed (along with Mr. YATES' '*Padārtha Vidyāsāra*') in the hands of the three pandits connected with the society who were eager to compete for the prize.

Extract of a letter (received overland) from the Baron Von HAMMER PURGSTALL forwarded a translation of the first chapter of the *Mohit*, of which other chapters have been published in the Society's Journal.

[This communication will appear in the ensuing number.]

Mr. Secretary McNAGHTEN, forwarded from *Simla* the official copy of the *Girnar* inscription communicated by Lieut. POSTANS to the Bombay Government.

A second parcel of Sanskrit and Arabic inscriptions were received from Capt. T. S. BURR, with a manuscript journal of his overland trip to India.

Capt. ALEX. BURNES forwarded from *Simla* a drawing, by a lady, of the bronze relievo discovered by Dr. LEON, at *Badakshan*, representing 'the triumph of BACCHUS.'

The original is on its way to Calcutta in charge of Dr. MACLEOD, eventually destined along with Dr. LEON's coins to be deposited in the British Museum; otherwise we should have hastened to present a lithograph of the beautiful drawing, which we doubt not is a most faithful representation of the original. BACCHUS and one of his attendants have lost their heads, but all that remains is decidedly of Grecian workmanship.

PHYSICAL DEPARTMENT.

Tides.

Mr. P. ANSTRUTHER, Col. Secretary in *Ceylon*, transmitted a further series of tidal observations at *Matura*, *Belligaun*, *Devendra*, and *Gandarah* for April, May, and June, 1838.

Observations from *Singapore* were also received from Capt. SCOTT, who had incurred an expense of Rs. 65.

Mr. BLUNDELL had expended at *Mergui*, *Tavoy* and *Amherst* Rs. 258.

The Secretary proposed mentioning this expenditure to Government in sending up the registers, having no doubt that the sums would be at once paid.

Natural History.

Dr. McCLELLAND presented a paper on Indian *Cyprinidæ*, with proofs of 13 (out of 15) plates already lithographed in illustration of his synopsis, which would be available for the Researches, should the Society think fit to honor the paper by publication.

Resolved, after thanks to Dr. McCLELLAND, that the paper should be immediately submitted to the Committee of Papers.

Read a letter from M. STEFANO MORRICAND, Secretary, Academy's Museum Geneva, proposing exchanges of shells, insects, mammalia, and dried plants with the Society or with individual collectors; his own exchanges may include all the above objects from Brasil or Bahia, as well as from Europe.

A specimen of the rock from the summit of Peterbôt (a volcanic breccia) and a plant which grows thereon, were presented by Capt. J. A. CHOMMEZIN, Engineers, who lately performed the feat of ascending it, in company with a friend, and a Madagascar apprentice.

An animal of the *Arctonix* genus obtained from a hill chief in the interior of the *Arracan* province, was presented by Capt. PATERSON, commanding the *Krishna*. A note by the Curator on the same was read.

[Printed in the present number, with M. DUVAUCEL's original notice on a similar animal formerly at *Barrackpoor*.]

A note on the *New Zealand* caterpillar lately presented by Major GREGORY.

[This will be printed in the ensuing number.]

The following articles were presented for the museum.

Stuffed and mounted specimen of a variety of the *Hylobates Lar* or Lesser Gibbon, presented by Lieut. MUIRSON BLAKE and differing in some respects from the *H. Lar* or Black Gibbon in the Society's museum, with which it is contrasted.

Stomach of the same animal; simple in its structure, lengthened in form, and very muscular at its pyloric extremity.

Cæcum of the same; differing slightly from that of the human subject, the *Simia Satyrus*, and *Semnopithecus Entellus* in having the vermiform appendix attached to the centre of the round end of the viscus; whereas in all the above named it has a lateral situation.

Uterus from the same subject; in an undeveloped state consequent on the non-age of the animal.

Digestive apparatus of several different descriptions and orders of birds preserved in spirits of wine with a view to determine by their internal anatomy in conjunction with their external characters, their natural affinities, and relations with each other—the only sure road to a true and correct systematic arrangement.

The name of each bird is labelled on the bottle and the peculiarities observable in the structure and disposition of the digestive organs are noted down in the descriptive catalogue of the museum.

Specimens of two species of land shells, the "*Bulinus*"? No. 5, and *Pupa* No. 8, described by Lieut. HURTON in his paper on the land shells of India. (See 3rd Vol. Society's Journal).

They are found living in company with each other precisely as stated by Lieut. H. though in very unequal proportions, the *Pupa* being about 1 to 50 or even 100 of the other; from which they are easily distinguished by their beautiful scarlet color, each individual looking like a single bead of long seed coral. It is an elegant little animal, and with its shell is a fine object for microscopic examination. They are common in the gardens and moist grounds of Calcutta during the rainy season, living generally under rotten vegetation where they feed secure from the sun's scorching rays. They are evidently oviparous, as the eggs can be distinctly seen through the diaphanous shell and are also found scattered upon the surface of the earth.

The following letter from Capt. PEMBERTON was read, and the collection alluded to was spread out on the table for the inspection of members.

To J. PRINSEP, Esq., *Secretary to the Asiatic Society.*

SIR,

Under instructions from Government I have the honor to present to the Asiatic Society a selection consisting of 145 prepared specimens of birds from the ornithological collections of the Bootan Mission.

Calcutta,
Sept. 5th, 1838.

I have, &c.

R. BOILEAU PEMBERTON, Capt.
Envoy to Bootan.

Dr. HELPER, employed by Government to explore the natural productions of the Tenasserim provinces, had arranged around the hall and staircase a part of the very extensive ornithological collection he had brought up from *Maulmain*, concerning the disposal of which he awaited the orders of Government.

He had prepared a note on the animal productions of the Tenasserim provinces, but on account of the lateness of the hour the President requested him to postpone the reading until next meeting.

Statistical Committee.

Dr. SPRY, submitted his report, embodying the various tables he had produced at the last meeting.

The report commenced by quoting the instructions of Government to Dr. BUCHANAN, (printed in the Statistics of *Dinajpur*, Appendix I. to J. A. S.) in illustration of the Committee's objects. The results hitherto obtained are summed up in the closing paragraph.

"One of the first attempts of your Committee has been to obtain possession of some of the numerous recorded documents and reports: and your Committee have now the satisfaction of stating that they have collected and arranged for immediate publication, partly from these sources, Tables bearing on the vital statistics of Calcutta; the education of the people of Lower *Hindustán*; and the commerce and industry of the country; making a total of forty tables. These your Committee consider will be sufficient to supply materials for a first number of a series of proceedings, and they hope thus to bring forward from time to time a series of numbers, that shall contain a mass of useful and practical knowledge. Your Committee desire however to be guarded in their professions at the outset of their undertaking, and not to be understood as attempting more than is feasible, or presuming to grapple with more than may be considered fairly within their power. In conclusion your Committee trust that the language of the French Government, when addressing its diplomatic and consular agents, quoted by M. HERMANN in his *Theorie de la Statistique*, page 78, may always be borne in mind when application is made to their labors, namely 'that a result of two lines will sometimes cost a month of toil, but that these two lines are a truth, and every truth is an everlasting contribution to humanity.'"

HENRY HARPUR SPRY,

Hon. Sec. Statistical Committee.

13th August, 1838.

Resolved, that the report and tables be immediately made over to the Committee of Papers to decide on the propriety and on the manner of their publication.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of August, 1838.

Forenoon, 10 A. M.

Afternoon 4 P. M.

| Day of the Month. | Atmospheric Pressure. | | Temperature. | | Hygrometry. | | Aqueous tension. | | Weather. | | Wind. | | Aspect of Sky. |
|-------------------|-----------------------|-------------------------|--------------|---------|-------------|---------------------|------------------|-----------|---------------|---------------------|---------------|-----------------|---------------------------|
| | Old Stand. Barometer. | New Barom. at 32° Fahr. | River water. | Of air. | Wet bulb. | Differential Therm. | Hair Hygrometer. | by point. | by Dew-point. | by Hair Hygrometer. | Rain on roof. | Rain on ground. | |
| 1 | 30.560 | 29.521 | 85.4 | 82.9 | 86.1 | 77.0 | 5.6 | 6.3 | 59 | 75 | 80 | 80 | c. at. & n. dr. at all. |
| 2 | 30.566 | 29.527 | 85.1 | 83.1 | 86.5 | 77.5 | 5.5 | 6.4 | 59 | 75 | 80 | 80 | n. dr. at all. |
| 3 | 30.584 | 29.545 | 84.6 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 4 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 5 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 6 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 7 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 8 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 9 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 10 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 11 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 12 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 13 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 14 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 15 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 16 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 17 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 18 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 19 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 20 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 21 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 22 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 23 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 24 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 25 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 26 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 27 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 28 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 29 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 30 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| 31 | 30.581 | 29.542 | 84.9 | 82.5 | 85.5 | 78.0 | 4.4 | 5.1 | 94 | 80 | 80 | 80 | do. cum. & n. dr. at all. |
| Mean. | 30.575 | 29.540 | 85.5 | 83.1 | 85.9 | 77.4 | 4.6 | 5.2 | 93 | 78 | 84 | 84 | much rain |

The remark of last month applies still to the rain-gauges:—taking 2 per cent. from the amount of rain on the roof, the true fall there will be 9.81, inches.

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I.—*Botanico-Agricultural account of the protected Sikh States.* By
M. P. EDGEWORTH, Esq., C. S. Masuri.

The extensive territory under the *Ambala* political agency comprises the hill states of *Sirmur*, *Kahlur*, and a portion of the plains principally possessed by Sikh chiefs, bounded by the above states to the north-east, the *Sutlej* to the north and north-west, the *Jumna* to the east, and the *Delhi* territory and *Bhatiana* to the south.

It is not my intention to treat of the hill Rajpoot principalities, as I am only very partially acquainted with but one of them (*Sirmur*) ; but solely of the "protected Sikh states" in the plains.

This tract of country may be divided into three great divisions, besides the narrow strip of *khádir* land adjoining the *Jumna* and *Sutlej* according to their most abundant natural products, viz., the *dakh* the *bábúl* and the *phalahi*.

I. The first of these, or *dakh* tract, extends from the high bank above the *Jumna*, which in most places adjoins the *Shah Nahr* to the *Linda* river, a small stream not noted in the exceedingly inaccurate maps* of this part of the country, which runs nearly parallel with the *Markhanda* at a distance of two to five miles from it, and ultimately unites with the *Sarasvati* a little below *Thanesar*. This tract of country is generally high and called *bangar*, which term however is more universally applied to the southern extremity, and not commonly to the

* I allude to the large maps published under the style of 'Trigonometrical survey,' though this part of the country has never been surveyed trigonometrically or otherwise ; to give an instance, Kotaha or Syed ka garhi, is divided into three places, viz. Kotaha or Syed, and ka garhi !!! at a considerable distance one from the other.

more northern and narrow part except in contra-distinction to the *khādir* in the immediate neighbourhood, to which my present observations more particularly apply, as I have never visited the more southern region. The most abundant natural product is the *dakh*, (*Butea frondosa*), which springs up wherever the land is not cultivated, and in many places (especially towards *Kaithal* and *Jind*) covers vast tracts of country which might be rendered most productive.

The flora of these jangals presents several features in common with that of the *Dhūn*, such as species of *Vitis*, *Dioscorea*, *Gloriosa*, *Asparagus*, *Costus* and *Zingiber*.

This tract is intersected by the rivers *Sarasvatī*, *Chitang*, and *Rakshasi* a branch of the latter; from these canals in all directions formerly existed and in a few instances have been lately re-opened, but they are generally overgrown with jangal. These three streams as well as a smaller one which joins the *Jumna* near *Buria*, all rise near one another in the high ridge above the *khādir* which skirts the *Sewāliks*, in the neighbourhood of *Chickrauli* and *Bilāspur*, and are partially supplied in the upper part of their course from springs, but the water from that source is quickly expended in irrigation and they are mainly dependent on rain. They are all characterised by excessive tortuousness of course, and owing to the great perpendicular depth of their banks, are exceedingly dangerous from sudden floods after heavy rain.

The soil is, generally speaking, tolerably rich; and in favorable seasons produces very fine crops, but, in parts of it, is exceedingly poor and scarcely worth the trouble of cultivating.

The usual crops in the *Khartf* are rice, which is pretty extensively cultivated in lands liable to be overflowed, and on higher ground cotton, maize, joar, and a very small quantity of bajra, mandiya*, kodon and chini. *San*. *Hibiscus cannabinus* is generally sown round cotton or pulse fields, while the beautiful *sani* (*Crotalaria juncea*) is sown in extensive fields by itself. The oil seeds *turia* (*Sinapis glauca*) and *tīl* (*sesamum*), both the white and purple-flowered varieties are sown, the former more sparingly and in richer soils is cut late in November or early in December; the latter is extensively cultivated both by itself and mixed with various *phaseoli*, such as *urud*, *moth*, *lubia*, &c., on higher

* It is as well here to remark a mistake I observed in Lieut. HURRON's account of his tour to the *Borenda* pass in your journal; he mentions the fields of *kodon* in the hills, but erroneously gives it the name of *Paspalum scrobiculatum*, which plant though called *kodon* in the plains is not cultivated in the hills: what the hill men term *kodon* is the *mandeoa* of the plains or *Eleusine corocana*.

and drier soils. All these crops suffer severely from the depredations of a hairy caterpillar called *kamlî* of the genus *Sericaria*.

In the *rabi*, wheat and barley form the principal crops, gram not extensively and generally mixed with either of the above, and *masur* (*Ervum lens*) very little cultivated; *sarson* (*Sinapis dichotoma*) is sown to a considerable extent, generally mixed with barley. The poppy is a valuable but very precarious crop, it is extensively cultivated in rich irrigable lands, and when not destroyed by hail, which is too often the case, amply repays the labor expended on it. The land is ploughed three times, being plentifully watered between each ploughing, before sowing; and subsequently the plant is kept continually irrigated till the fruit is formed. The opium is collected in the usual way, by women and children, an incision being made in the head by a three-pronged instrument. The heads are kept and sold, the seeds for oil as well as an agreeable food, remarkably refreshing during fatigue and abstinence; with the exception of what is sold in the neighbourhood the opium is sent to the westward where the poppy is not cultivated for it, for the use of the Sikhs who are immoderately fond of it and consume immense quantities. Tobacco is not much cultivated.

II. The *Babul* country. This tract extends from the *Markhanda* (the narrow slip between that river and the *Linda* being intermediate in its character), to the high ground between the river called in the map "*Khanpur ki naddi*" and the most western branch of the *Ghaghar*. It is intersected with numerous streams rising either in the outer range of hills as the *Ghaghar*, *Markhanda*, *Begana*, *Baliala*, *Tangrie* and *Rhone*, or in the high ridge which separates the tract from the *Sabcolline Khadir* as the *Ombla*, *Charmari* and other nameless streams enjoying the generic name of *chhoas* when depending on rain, or *ogal* when fed by small springs. The soil is generally sandy and salt, which latter characteristic is shown by the abundance of *fras* (*Tamarix faras*) which will flourish only in such a soil. The *bâbul* or *kikar* (*Acacia arabica*) is the natural product, every where springing up and often forming extensive groves. The general appearance of this tract is pretty, the level of the plains being frequently diversified by gentle slopes towards the numerous rivers and their tributary ravines.

The horizon is generally bounded by groves of *bâbul* trees, which are also abundantly scattered through the fields. But what gives a peculiar feature to a considerable portion of the country, especially between *Ambâla* and *Patidala*, are the numerous hedge-rows of *fras*, which near the villages often form beautiful shady lanes, reminding one of English scenery. This very useful tree is planted from cuttings about a foot

long; they are covered at the top with cowdung to prevent the moisture from rotting the wood, and are planted in little banks raised along the edges of the field or road, at the first commencement of the rainy season; in a week or two they begin to sprout and by the following year are frequently six or seven feet high, and in seven or eight years form middling-sized trees. From each cutting there are usually several stems, and as soon as any of these have attained a sufficient size to render them available for small rafters, ploughs or other agricultural implements, they are felled, the smaller ones, if any, being left, if not the root soon throws out a new crop for a future supply.

They rejoice especially in sandy and somewhat saline soil and it is remarkable that in dry weather the outside of the leaves is always covered with a saline efflorescence invisible to the eye but very perceptible to the taste, but this is not observable in the leaf itself, which is tasteless. Probably in consequence of the quantity of salt in the wood, it cannot be used as fuel in a room from the intolerable fumes it gives out.

A great portion of this tract is very low, especially that part between the numerous branches of the *Ghaghar*, and is cultivated with rice in the *kharif* and gram in the *rabi*. *Joar* is even less cultivated than in the first tract, and *bajra* scarcely ever seen, both being sown principally for the sake of the fodder.

The rest of the *kharif* crops are the same as those in the first tract, except that *mandua*, and *til* are not so much cultivated, and I have not observed *kodon* in it at all. In the *rabi*, wheat and barley are the principal crops, but gram and *masur* are abundant in the lower lands of stiffer soil. *Surson* is very abundant either alone or mixed with grain, as is flax like it cultivated for the sake of its oil. The *Raphanus raphanistrum*, called *tárámira*, is also cultivated generally among the stubble of the *cotton* for a coarse oil yielded by it: it is exceedingly hardy and never suffers from the frost which frequently destroys the *surson* crop.

Mehndi (*Lawsonia inermis*) is cultivated in a few villages by a peculiar caste called **maghs* in the following manner.

* This is the only caste who cultivate this crop, and they give the following strange account of their origin: Once upon a time there was a Sarsut brahmin, king of *Mecca* (who was maternal grand-father of MUHAMMAD!) his name was Rája MUKHTASUR.

From him sprung SAHARIYA who with his son SAL was turned out of *Arabia* by HOSSAN and HOSSYN. Thence they migrated to *Pandri* an island, and thence to *Mahmúdsur* in the *Barara mulk* W. of *Bhatinda*, where they colonised

The seed is soaked in water for three days, then strained and again soaked till the radicle begins to sprout. The seed beds are about three feet wide and twelve or fourteen long, from north to south, so that they may be sheltered by hurdles from the prevailing winds (west or east). In each bed about half seer pukka, of seed prepared as above, is sown, and is sufficient to sow from half to two bigas kucha according to the growth.

After sowing the germinating seed they are daily watered in the evening till they sprout above ground which is generally the third or fourth day. Sown in Chyt, it is transplanted as soon as there has been a good fall of rain in Asarh or Sráwan into fields, and watered as soon as planted, and subsequently every ten or twelve days as may be found necessary. It is ready for cutting the following Jeth, and again in Mangsir, again in Bysakh and then in A'san, and so on. After the first annual cutting it is well manured and watered, but after the autumnal one it is left alone till the *Huli* when it is again manured to be ready for cutting the following month. Thus treated it will continue to be productive for ten or twelve years.

When cut, the leaves are beaten off the twigs, and about a pukka mun is produced from a kucha biga, and is sold at the rate of six to fifteen seers a rupee.

Towards the foot of the hills, *kulti* (*Dolichos uniflorus*), and the *sáwank* (*Panicum frumentaceum*), are moderately cultivated*.

In both these tracts the sugar-cane is cultivated extensively, but in a very careless way. It is sown in March or the end of February as soon as the frosts have ceased, in large fields, not in lines or with any regularity, and is generally surrounded with a hedge of *ticar*, (*Cajanus bicolor*), which is sown when the canes are set. The only care taken is to prepare the ground by frequent ploughings and a quantity of manure depending on the supply from the village sweepings and the laziness or activity of the cultivators. On the first fall of rain after the young plants begin to sprout (in the end of March or April) the caked surface of the ground is broken either by means of a wooden mallet or a small hoe. The cane is seldom irrigated, never unless when a small canal (*khdál*) from one of the torrents, or *ogals* passes near them and consequently the crop is almost entirely dependent on the rains. It is 17 villages. Thence they were driven forth, and after sundry migrations are now settled in the following places :—

1 Chaurira; 2 Irágarh, near Patíálá; 3 Yára, near Shahábád; 4 Indri; 5 Thánesar; 6 Deorána, near Ambála; 7 Mustafábád; 8 Sádhoura; in the Sikh states. And Lakhnauti in the *Mozaffarnagar* district.

* Both of these are extensively cultivated in the hills.

seldom fit for cutting before the end of December by which time the frost sets in and materially deteriorates the quality of the juice, often even entirely destroying the cane and rendering it useless for any thing but indifferent fodder for the cattle and bad seed for the ensuing year. The cane is even in the best years very poor, and seldom is more than six or seven feet long and three fingers thick ; but as the very worst is always kept for seed it is not wonderful that it should have deteriorated. The only wonder is, that it should be considered worth the trouble of cultivating at all in such a way. The cane is cut from the field by sickles and carried entire to the *kolú* or sugar-mill, which is generally situated in the *gohar* or space surrounding the village. I have here never observed it at a distance from the village (as is usual in some parts of the country), except when a river intervenes ; then it is chopped into little bits and pressed in the *kolú*, the mash from which the juice has been expressed, with the leaves, being used as fuel to heat the sugar boilers. The village cattle are allowed however to help themselves *ad libitum* from the heap. The tall column of dark smoke from the *kolús* with the delicious fragrance of the boiling juice, greet one from almost every village from the end of December to the middle of February, by which time the work is generally quite over, though sometimes it is continued till late in March, when the crop is unusually abundant.

In garden fields near town, species of the *cucurbitaceæ* and *arums*, with the sweet-potatoe and baigan, capsicum, methi (*Trigonella fenum-græcum*) and radish (both as a vegetable made of the young pods and for oil) are generally cultivated.

The best grasses in this region are, after the *dhub* grass, which is abundant, the *dhaman* (*conchri* and *penniseti*, spp.) the *palwán* (*Andropogon pertusum*, *bladhii* and *scandens*) from the jangals, and from the fields in the rains the annual species called *janglí chini* and *sawank*, *Panicum colonum*, *briaroides*, *hirsutum*, &c. are cut in quantities for the cattle. The large *birs* or preserves for hay kept by the Sikh chiefs consist chiefly of the spear grass (*Andropogon contortum*) with the *palwán* and *dohamans*, and the coarser kinds *Poa cristata*, *Andropogon muricatum* (*dhabri* and *senh*) with the coarser *sacchara*, cover considerable tracts in the *dhak* region and are useful for thatching. The small *Perotis latifolia* and *Imperata cylindrica* form the first coating to the sandy channels of torrents deserted by the stream which are not unfrequent, but they are of little value and only used when no other grass is procurable. The *bavú*, a species of *andropogon*, is considered poisonous.

The population of these two tracts is mostly Hindu, but among the zemindars and lower castes there is a considerable sprinkling of Musalmáns, Rajpúts, both Hindu and Musalmán, but principally the latter, and Jats are the commonest classes among the zemindars; but Rors, a caste I believe peculiar to this part of India, are not uncommon among the cultivators. Musalmán *mális* are the best. The Sikh persuasion is not common among the Jat zemindars, but confined to the invading chiefs from the other side of the *Sutlej*, but it is not unusual for sweepers and chamars to adopt that faith under the name of Rangrethas and Rámdásias. About one-third of the kahars are Musalmáns, which proportion becomes larger as we advance westward towards *Lodihana* and the *Panjáb*. A Musalmán tribe *Gagra* replace the sweeper caste in the charge of leeches.

III. The *Phalahi* tract. This extending westward from my second division, is bounded on the north by the *Sutlej* low land or *Bhet*; to the south by *Bhatiana*, while towards the west I am not acquainted with its limits or the nature of the countries that succeed it (if different) towards *Piraeper*. It may be divided into two great subdivisions, the *Phalahi* proper and the *Jhand*.

In the first of these water is found tolerably near the surface (30 to 80 feet), so that wells for irrigation are abundant; in drawing water the lao or bag pulley and inclined plane is in almost exclusive use, the Persian wheel or harat being very seldom seen, and the depth of the water from the surface entirely precluding the use of the *dhenki* which is not rare in the preceding tracts.

The *phalahi*, *Acacia modesta*—WALL., from which I have distinguished this tract, is a small tree about the same size as the *bábúl* but very different in appearance, being very scraggy and armed all over with sharp hooked prickles. It is deciduous and when the leaves first appear in March remarkably beautiful, the delicate foliage being of the most brilliant light green and set off by the bunches of long cylindric spikes of white flowers diffusing a delightful perfume through the air; but its beauty is very transitory, the flowers soon fade and the leaves assume a dreary glaucous hue and fall early in winter, leaving the tree covered with the compressed yellowish pods. The wood is very hard and heavy, of a dark brown color, and is much used for a variety of economical purposes. It grows abundantly in all waste places. In this tract the *Chamror*, *Ekretia lavis*, again appears, being abundant at the foot of the Sewalik but very rare in the *bábúl* tract: it also is much valued for the hardness of its wood.

Sugar-cane is only cultivated in the most northern part of this tract,

but where grown is eminently successful, being cultivated with much more care than in those parts that I have previously mentioned, and kept constantly irrigated. The juice is expressed in the kulhari or roller sugar-mill, of which I formerly sent a description to the Agricultural Society.

Cotton is also extensively grown in two ways, either as a rain crop, as in the before mentioned tracts, or is sown in April and receives moderate irrigation during the hot weather ; under this treatment it grows to a much larger size than is common under the former method.

The irrigated wheat and barley are particularly luxuriant, and in good seasons the grain particularly fine ; it is frequently sown as early as August or September so as to be in flower by December, but the fruit then formed is generally destroyed by the hard frosts, and in seasons of drought the white ants commit great devastation, laying waste whole fields by devouring the roots of the plants ; rats also do great injury to this crop, burrowing in the sandy hillocks so plentifully interspersed among them and denuding the margin of the fields.

Mustard is also cultivated a good deal, and poppy sparingly and only for its oil not for opium. *Masur* I have never seen in this tract.

Rice is only grown in that part of this tract bordering on the bábul region, and if ripe sufficiently early, is succeeded by a crop of gram in the same ground.

The usual kharif crops are *bajra* and *joar* and maize, all of which grow most luxuriantly and to an immense height.

The southern portion of this division which I have designated the *Jhand* tract, is termed by the natives *Malwa*, whence that appellation to the Sikh chiefs of families from the south of the *Sutlej* in contra-distinction to the *Mánjha* and *Doab Sikhs* or invaders from the other side. It is also named *Chowhára* as distinguished from the *Tihára*, or lower part of the upper division just described, in consequence of only $\frac{1}{4}$ of the gross produce being demandable as the government share, while $\frac{3}{4}$ is claimable in the former and $\frac{1}{2}$ in the remaining portion of this and the two preceding tracts, therefore termed *Pachdié*.

What I have just remarked regarding the luxuriance of the gram and kharif crops holds good also with regard to this division when the rains are tolerably plentiful. But the wheat is generally poor, owing to the very sandy nature of the soil. Here irrigation is impracticable owing to the very great distance of the water from the surface, varying from 100 to 300 feet. In many villages there is only one, in some not even a single well, therefore not only the cattle but even the inhabitants very much depend on ponds (*tobas*) for their support. In

dry seasons villages are often temporarily abandoned in consequence of the failure of water. Therefore it is a custom that those who take water out of a pond pay for it by digging and carrying out a basket full of earth for every pot they fill with water, so that the cavity is gradually enlarged and deepened.

The appearance of this part of the country is very peculiar. The fields are as it were basins surrounded by long low rolling hillocks of dry sand, either quite bare or clothed with a peculiar vegetation, and are almost universally surrounded by high thick hedges to protect them from the deer; these fences are made of dry thorns heaped loosely together, generally running along the summits of the sandhills, and between them lie the narrow roads barely wide enough for a hackery to pass.

The vegetation on these sandhills consists principally of a species of *Artemisia* of a most delicious fragrance, and an aromatic species of *Andropogon* resembling *A. twarancusa*. (Is either of these, or which of them is the *Nardus* of ARRIAN?)

This *Andropogon* is much liked by cattle and is said to communicate its peculiar flavor to the milk. Besides it are species of *Cenchrus* and *Pennisetum*, one of which is a most disagreeable torment to walkers, the sharp recurved hooks of its involucre fastening to one's clothes and even to one's skin; its seed however sometimes is used as food in times of great scarcity. The leaves both of this species and of two or three others which are indifferently termed *dhamun* are excellent fodder and are the principal grass for horses instead of the *dhub* which is very rare*. The *madar*, *Calotropis Hamiltonii*, with *Cucumis pseudo-cocynthis* and a species of *Momordica* also luxuriant on those barren heaps, with a species of *Clerodendrum* the wood of which is used for obtaining fire by friction, and two species of *Zizyphus*, *Z. jujuba*, and another, peculiar I believe to this tract of country, with smooth glossy leaves and globular purple fruit.

The most abundant thorn however is the *Jhand*, *Prosopis spicigera*†, which covers barren spots as the *Zizyphus* does in other parts of India

* This is remarkable for bearing on its roots a curious parasitical species of *Orobanche*, with very thick stalks from one to four inches in diameter, full of almost pure water, which it must have elaborated from the milky juice of the *madar*, and derived from sandhills so dry that it is difficult to believe that so much liquid could have been procured from them; and what is more remarkable is, that this parasite is only produced where the *madar* grows in the very driest sandhills and only in this portion of the country.

† When I first met this as a shrub I was unwilling to consider it as the *Prosopis* on account of its large ovate stipules, that tree being described as exsti-

as a low shrub, but it is also met with as a small tree mixed with the *phalahi* and *rerul* (I believe *Acacia leucophlœa*), which last as well as the *Jhand* are utterly useless except as fuel.

The *dhak* (*Butea frondosa*) and the *hins* (*Capparis sepiaria*) are almost unknown, while *Capp.* and *aphylla* grows to the size of a small tree, and in the month of April its scarlet flowers have a showy appearance mixed with the white blossoms of the *phalahi*. The *rahers* (*Bignonia undulata*) is found not uncommonly and is very brilliant when in flower: this with a small liliaceous plant is a curious instance of plants from the Sewalik hills reappearing in so very dissimilar an habitat.

Of large trees the peepul is the only one of usual occurrence: sometimes the *Tamarix Fras* or *Pharmi*, as it is named in this part of the country, is found of a considerable size. The *sissu* extends even to the borders of the desert. *Sirris* is seldom to be seen; *mangos*, or *jamun* never. The *Nim* is very rarely to be met with only near some Musalmán saint's tomb.

In the most south-westerly part of this tract bordering the desert, a considerable quantity of alkali is manufactured from a species of *salsola** and forms a considerable article of commerce under the name of *sajji*.

The population of the third tract differs very much from that of the former ones. In the more northern parts the zemindars are mostly Musalmán Rajpúts, with few Jats among them; but as we come southward the proportion gradually changes till in the *Tihara* a Musalmán is scarcely to be found and the zemindars are almost universally Jats and of the Sikh persuasion; in that part of the country also the Kahar or bearer caste disappears, and among the lower people the sweepers, assuming the title of Rangrethas, are the most numerous.

Lastly, a few words on the two strips of land bordering the *Jumna* and the *Sutlej*.

The *Khadir* of the former may be considered as upper and lower, the upper contained within the branches of the *Jumna* meeting near *Rajghat*, is almost entirely populated by Goojurs. The soil is cold,

puluate, but I have subsequently found stipules on the young branches of the full-sized tree, though they are smaller in proportion to the leaf than in the shrub; besides the prickles are much more numerous on the shrub than on the tree.

* It is a curious circumstance that I found a species of *salsola* near *Ambala* growing in a single salt-pan, and not another to be found, anywhere in the neighbourhood for miles, though I searched every salt-pan for it.

moist and sandy, as may easily be imagined, possession is most precarious as these upper branches of the river are constantly changing their course. An old tree is therefore seldom to be seen, or a pukka house, generally grass sheds form the only habitations, because the sandy soil will not bind to form mud walls but is washed to pieces by the first rain, therefore fires are very frequent in the hot weather.

The crops are the same as in my first division, exclusive of those which I mentioned as peculiar to the higher grounds, and they only succeed in years when elsewhere there is a failure; with moderate rain the whole country reticulated as it is with channels of the *Jumna* is overflowed, and it is only in very dry seasons that the crops succeed as in 1837 when they were most luxuriant.

The lower part of the *Khadir* is only intersected by a few channels of old streams now used as escapes from the *Delhi* canal, this portion is less liable to flooding and consequently in general bears middling crops. Gram is seldom or never sown in it, and masur replaces it.

The '*Bhet*' of the *Sutlej* differs from the *Khadir* of the *Jumna* by, being yet more barren. (The upper part of this *Bhet* I have not seen, and the lower part is nearly entirely covered with thick grass jangal the haunt of wild beasts, similar to that in the *Gangetic Khadir*).

The sand of the *Sutlej* is much darker in color and with much larger flakes of mica than that brought down by the *Jumna*, and these larger micaceous particles are observable throughout the whole of the *phalahi* tract as well, while the *bábúl* and *dhák* regions partake of the *Jumnatic* character.

Throughout the whole of this territory I have never seen the *matar* of Bengal (*Lathyrus sativus*) cultivated, but it is constantly to be found as a weed mixed with pulse or corn.

The *arhar* (*Cajanus flavus*) is never cultivated by itself, but the variety *C. bicolor* or *túar* is sown round sugar-cane fields as before mentioned, and is cultivated in the hills under the name of *kúí* which leads me to favor the considering them as two distinct species and not merely varieties.

I had hoped to have been able to give a more complete account, but being removed rather suddenly I have been unable to complete some inquiries I was previously making and therefore send this imperfect as it is.

Appendix I.

Abstract of Thermometer kept at Ambala.

| Of temperature. | | | | Means. | | | | Of diurnal variation. | | | |
|-----------------|-------|-------|-------|--------|--------|-------|-------|-----------------------|-------|--------|--|
| | 1835 | 1836 | 1837 | 1838 | Means. | 1835 | 1836 | 1837 | 1838 | Means. | |
| January, .. | 52.15 | 51.4 | 53.5 | 55.07 | 53.03 | 22.3 | 19.6 | 22.4 | 27.5 | 24.39 | |
| February, .. | 59.82 | 57.7 | 56.3 | 62.3 | 59.08 | 23. | 18.5 | 18.4 | 22.5 | 20.6 | |
| March, | 64. | 69.77 | 68.19 | 71.06 | 68.25 | 21.2 | 20.7 | 20.84 | 19.5 | 20.66 | |
| April, | 77.07 | 76.43 | 79.85 | 79.17 | 78.38 | 20.7 | 19.8 | 23.5 | 20.85 | 21.31 | |
| May, | 87.9 | 88.41 | 84.55 | 86. | 86.66 | 20. | 21.92 | 23.9 | 19.76 | 21.34 | |
| June, | 90. | 88.07 | 90.04 | | 89.37 | 15. | 17.10 | 21.48 | | 17.89 | |
| July, | 83.1 | 83.31 | 86.99 | | 84.41 | 8.2 | 13. | 13.58 | | 11.59 | |
| August, | 84.73 | 83.9 | 86.38 | | 85. | 9.8 | 10.6 | 12.97 | | 11.12 | |
| September, . | 81. | 79.47 | 82.68 | | 81.11 | 12. | 14.4 | 15.46 | | 14.93 | |
| October, ... | 73.36 | 71.1 | 75.43 | | 73.31 | 21.82 | 24. | 19.48 | | 21.76 | |
| November, . | 62.2 | 63.7 | 64.37 | | 63.42 | 22.87 | 24.8 | 23.3 | | 23.65 | |
| December, . | 55.91 | 54. | 56.1 | | 55.33 | 19.53 | 22. | 22.6 | | 21.37 | |
| Mean, | 72.57 | 72.27 | 73.7 | | 72.85 | 18.6 | 18.45 | 20.6 | | 19.19 | |

| | | Of Minimum. | | | | Extremes. | | | Of Maximum. | | | | | Of diurnal variation. | | | |
|-------------|------------|-------------|------|------|------|-----------|------|-------|-------------|------|------|------|------|-----------------------|------|------|------|
| | | 1835 | 1836 | 1837 | 1838 | 1835 | 1836 | 1837 | 1838 | 1835 | 1836 | 1837 | 1838 | 1835 | 1836 | 1837 | 1838 |
| Jan. | { Highest, | 53. | 54. | 59. | 47. | 70. | 67.5 | 70. | 74. | 29.5 | 27.5 | 28. | 35. | | | | |
| | { Lowest, | 34. | 31.5 | 37. | 33. | 55. | 54. | 63. | 65. | 12. | 7. | 10. | 23. | | | | |
| Feb. | { Highest, | 60. | 54.5 | 61. | 59. | 75. | 76.5 | 72. | 81. | 28. | 24. | 32. | 30. | | | | |
| | { Lowest, | 40. | 42. | 40. | 43. | 65. | 53. | 56. | 61. | 13. | 1. | 5. | 2. | | | | |
| Mar. | { Highest, | 68. | 67. | 68. | 67. | 82. | 85. | 92. | 87. | 30. | 26. | 30. | 27. | | | | |
| | { Lowest, | 48. | 50. | 48. | 52. | 68. | 76. | 68. | 70. | 8. | 10. | 12. | 3. | | | | |
| April, | { Highest, | 74. | 76. | 75. | 77. | 95. | 95. | 102. | 99. | 28. | 27. | 34. | 30.5 | | | | |
| | { Lowest, | 59. | 60. | 60. | 59. | 79. | 76. | 75. | 73. | 14. | 4. | 9. | .0 | | | | |
| May, | { Highest, | 86. | 87. | 85. | 87. | 105. | 106. | 109. | 107. | 28. | 28. | 34. | 27.5 | | | | |
| | { Lowest, | 68. | 66. | 59. | 66. | 85. | 90. | 80. | 72. | 14. | 14.5 | 7. | .6 | | | | |
| June, | { Highest, | 92.5 | 86. | 87. | 94. | 109. | 107. | 105.5 | 112. | 28.5 | 29. | 29.5 | | | | | |
| | { Lowest, | 74. | 69.5 | 68. | | 81. | 79. | 95. | | 8. | 1. | 12. | | | | | |
| July, | { Highest, | 83.5 | 83. | 89.5 | | 93. | 93. | 105.5 | | 17. | 15. | 25.5 | | | | | |
| | { Lowest, | 72. | 75. | 75.5 | | 78. | 81. | 85. | | 2. | 4. | 5. | | | | | |
| Aug. | { Highest, | 85. | 81. | 87. | | 95. | 93. | 99.5 | | 15. | 15. | 19. | | | | | |
| | { Lowest, | 74. | 73. | 72. | | 78. | 76. | 81. | | 4. | 2. | 8. | | | | | |
| Sept. | { Highest, | 81. | 81. | 78. | | 91.5 | 93. | 93. | | 22. | 23. | 20. | | | | | |
| | { Lowest, | 66. | 59. | 71. | | 81. | 73. | 86. | | 5. | 5. | 10. | | | | | |
| Oct. | { Highest, | 70. | 70. | 72. | | 87. | 88. | 90. | | 27. | 31. | 23. | | | | | |
| | { Lowest, | 57. | 53. | 58. | | 82. | 78. | 79. | | 15. | 19. | 14. | | | | | |
| Nov. | { Highest, | 57. | 56. | 60. | | 85. | 82. | 82. | | 32. | 27. | 26. | | | | | |
| | { Lowest, | 45. | 42. | 44. | | 66. | 68. | 69. | | 13. | 21. | 13. | | | | | |
| Dec. | { Highest, | 58.5 | 52. | 51. | | 75. | 69. | 72. | | 28. | 21. | 26. | | | | | |
| | { Lowest, | 39. | 37. | 40. | | 58. | 60. | 62. | | 7. | 9. | 19. | | | | | |
| Whole year, | { Highest, | 92.5 | 87. | 89.5 | 94. | 109. | 107. | 109. | 112. | 32. | 31. | 32. | 33. | | | | |
| | { Lowest, | 34. | 31.5 | 37. | 33. | 55. | 53. | 56. | 61. | 2. | 1. | 5. | 0. | | | | |

Appendix II.

Abstract of Herbarium collected in the Sikh States, exclusive of plants found only in the immediate neighbourhood of or on the Sewalik range.

| Polypetalæ. | | Total Cult. | | Loranthaceæ, | | 1 | 0 |
|-------------------------------|---|-------------|--|----------------------|--|----|---|
| Ranunculaceæ, | 3 | 1 | | Cucurbitaceæ, | | 17 | 9 |
| Papaveraceæ, | 3 | 2 | | Ficoidaceæ, | | 1 | 0 |
| Nymphæaceæ, | 2 | 0 | | Cruciaceæ, | | 11 | 6 |
| Nelumbonaceæ, | 1 | 0 | | Capparidaceæ, | | 6 | 1 |
| Apiaciæ (Umbelliferae), | 9 | 6 | | Resedaceæ, | | 1 | 0 |
| Vitaceæ, | 3 | 1 | | Violaceæ, | | 1 | 0 |
| Onagrariaceæ, | 5 | 0 | | Samydaceæ, | | 2 | 0 |
| Combretaceæ, | 1 | 1 | | Moringaceæ, | | 1 | 1 |
| Myrtaceæ, | 2 | 2 | | Flacourtiaceæ, | | 1 | 0 |
| | | | | Sapindaceæ, | | 1 | 0 |

| | | |
|-----------------------|-----|---|
| Eriocaulonacem, | 1 | 0 |
| Cyperacem, | 35 | 0 |
| viz. Cyperem, 17 | | |
| Scirpem, 17 | | |
| Caricem, 1 | | |
| Graminacem, | 112 | 0 |
| viz. | | |
| Phalaridem, | 1 | 0 |
| Panicem, | 42 | 4 |
| Saccharinem, | 19 | 3 |
| Rotbolicem, | 3 | 0 |
| Olyrem, | 4 | 1 |
| Phleoidem, | 1 | 0 |
| Agrostidem, | 7 | 0 |
| Stipem, | 3 | 0 |
| Oryzem, | 2 | 1 |
| Chloridem, | 8 | 1 |
| Avenacem, | 2 | 1 |
| Arundinacem, | 2 | 0 |
| Triticem, | 4 | 2 |
| Festucem, | 12 | 0 |
| Bambusem, | 2 | 2 |

Total, Endogenæ, 193 30

| Acrogenæ. | |
|---------------------|-----|
| Ophioglossacem, .. | 1 0 |
| Polypodiaceæ, | 3 0 |
| Characem, | 1 0 |
| Maralliacem, | 1 0 |

Total, 6 0

| | wild. | cultd. | Total. |
|--------------------|-------|--------|--------|
| Polypetalæ, | 182 | 88 | 270 |
| Incompletæ, | 37 | 17 | 54 |
| Monopetalæ, | 173 | 25 | 198 |
| Gymnospermæ, | 2 | 0 | 2 |
| Endogenæ, | 163 | 30 | 193 |
| Acrogenæ, | 6 | 0 | 6 |
| Total, 563 | 160 | 743 | |

Out of these the following are peculiar to the *Phalaki* and *Jhand* tract.

Farsesia Hamiltonii.
Reseda oligandra, (mihl.)
Bergia odorata, (mihl.)
Malva Malvensis, (mihl.)
Fagonia Mysorensis?
Zizyphus, sp.
Crotolaria arida, (Royle)?
Loteum, sp.

Plantago, sp.
Euphorbia, sp.
Ephedra, sp.
Boraginacearum, sp. 1.
Heliotropicearum, sp. 2.
Acanthacearum, sp. 1.
Astragali, sp. 2.
Orobanchæ calatropidis.

And peculiar to the *Khadir* and *Bâd* are the following remarkable European forms.

Viola Patrini, (?)
Vicicærum? sp.
Lotus corniculatus.
Rubus distans.

Erythræa, sp.
Ajuga decumbens.
Butomus umbellatus.
Alisma, sp.
Ophioglossum, sp.

I subjoin a description of such species as I believe to be new.

Reseda oligandra, mihl. c.

Herba glauca ramosa foliis linearibus acutis papillosis, ramulis axillaribus, stipulis 2 parvulis dentiformibus adnatis ad basin foliorum; spicis longissimis terminalibus rachi striata floribus sub-distantibus solitariis sessilibus, bracteis parvis solitariis calyculatis sepalis, conformibus, calyce tetra-sepalo, sepalis lanceolatis, papilloso-marginatis, petala subæquantibus, ovario brevioribus. Petalis duobus oblique lanceolatis, margine interiori subrecto exteriori v. obliquo v. 1-lobato, vel duobus in unum trilobum coalitis inter duobus sepalis superioribus sitis concoloribus (albis) vel ad apicem sub-glandulosi; staminibus sæpius 3, basi coalitis antepetala sitis, vel 5 (v. 4 uno v. altero absenti) quorum 3 coalitis 2 lateralibus liberis sepalis superioribus opponuntur; antheris geminis. Disco nullo nisi basin staminum sub-dilatatorum intelligis.

Pistillo ad latus inferius floris sito ovario 4-lobo, lobis tumidis vesiculosi carinis 2 papillosis instructis, stigmatibus 4 ad apicem loborum, inferiore majore, superiore minimo capsula 1-loculari ante anthesin ore aperto marginibus

valvularum iatus reflexis; seminibus numerosis reniformibus placentis 4 parietalibus suturas subtendentibus affixis.

Bergia odorata, (Miki.)

Ramis decumbentibus ramosis teretibus pubescentibus. Foliis oppositis bistipulatis oblongo-ellipticis sessilibus serratis pubescentibus, stipulis subulatis, ramulis axillaribus; floribus axillaribus 1-3 utraque axilla, pedunculatis pedunculis 1-floris, calyce 5 sepalo, sepalis ovatis pubescentibus, petalis 5 obovatis integris; staminibus alternis brevioribus, stylis 5-ovario 5-loculo.

Odor aromaticus Anthemidis.

Habitat in inundatis proper Báláwali.

Malva Malvensis, (Miki.)

Prostrata hirsutissima, ramis teretibus foliis petiolatis quinquefidis, segmentis 2-lobis obtusiusculis; floribus axillaribus subsolitariis in apice ramorum subracemosis foliis floralibus minimis sub-nullis petiolatis. Bracteolis 6 subulatis; Calyce ventricoso hirsutissimo. Corolla pallida calyce vix longiore. Carpella 7, 8 plerumque 9, lateribus planis rugosis dorso costato. Odor aromaticus Pelargonii, Crescit cum præcedente.

Astragalus sesameus, D. C. II. p. 288.

Ramis decumbentibus humi adpressis longis simplicibus teretibus hirsutiusculis foliis alternis 5-7-foliolatis foliolis ovalibus hirsutiusculis, stipulis liberis cuneatis; racemis axillaribus, pedunculis in anthesi folio brevioribus in fructu elongatis, floribus sub-capitulatis brevissime pedicellatis, bracteis subulatis ciliatis; calyce hirsuto 5 dentato, dentibus acutis supra fissis, vexillo obovato, emarginato recto, alis oblique ovatis unguiculatis carina obtusa, stam. 1-9-filamentis brevibus antheris hirsutis, stylo brevi curvato stigmatibus capitato glabro legumine ovato, dorso sulcato cum stylo persistente apiculato villosa seminibus oblique reniformibus.

Flores minuti pallide purpureis. Lodihaana.

Astragalus incurvus, D. C. II. p. 304.

Perennis hirsutus, caulibus radiatim prostratis, foliis alternis petiolatis alternatim pinnatis foliolis oblique ovatis apice acutis hirsutis, stipulis subulatis petiolo adnatis, floribus capitulatis pedunculis axillaribus brevibus 4-5-floris bracteis subulatis hirsutis; calycibus 5 partitis segmentis subulatis, corolla purpurascens, vexillo longo oblique valde emarginato carina duplo longiore, alis vexillo brevioribus 1-dentatis leguminibus stellatim dispositis margine inferiore introflexo falcatis gibbis hirsutis, utroque loculo 4-spermo seminibus rhomboideis.

Malva et Pentepotamia. These two species are remarkable as being identical with or very strongly resembling the two African species to which I have referred them.

Heliotropium.

Perenne ramosissimum omnino pilis sub-spinosis asperissimum, foliis sessilibus lanceolatis valde rugosis asperissimisque, corymbis subterminalibus dichotomis floribus sessilibus, calycis segmentis obtusis marginatis pilosis corollæ tubo ventricoso viridi calyce dimidio longiore inferius piloso, margine brevi undulato albo 5-fido segmentis rotundis capsula lævi rugosiuscula vix 4-partibili. In Arenosis Malwæ et Lodihaanæ abundantissimum.

Boraginæarum species—

Annua erecta ramosa hirsutissima pilis mollibus spinulosisque mixtis, foliis lanceolatis distanter crenatis, ad crenas costasque spinulosis aliter villosis;

floribus racemosis pedicellatis, racemis foliolosis; calycibus ventricosis, 10-costatis, 5-partitis, corolla tubulosa limbo 5-partito segmentis rotundis, fauce breviter 5-fornicata intus pilosâ at non clausa, staminum filamentis brevibus antheris ovatis cærulescentibus, pistillo recto libero stigmatе clavato, nucibus basi affixis oblique ovatis subrugosis apice acutiusculis, basi perforatis fauce perforationis plicata.

Herba habitu *Hyoscyami*, calyce *Physalin* vel *Lychnidam* vespertinam æmulans, Corolla alba.—*Malwa*, *Pentapotamia*.

Orobanche Calatropidis.

Spica confertiflora, caule (vel rachi) glabra spongiosa succi (aque similis) plenâ bracteis ternis 1-floris, unâ inferiore majore ovata apice acuminata demum marcescente calycem superante carnosâ, purpurascente supra fâlvâ, duabus lateralibus ellipticis caniculatis lateribus versus basin pilis carnosis ciliatis, aliter glabris, calyce brevioribus; calyce 5-fido segmentis obtusis glabris corolla ringente tubo calyce subduplo longiore curvato, limbo bilabiato labio superiore 2-fido minore suberecto segmentis rotundis emarginatis purpureis, inferiore patulo 3-fido segmentis rotundis emarginatis ad marginem purpurascente, intus flavo, fauce valleculis 2 luteis instructa, staminibus 4 didynamis inferioribus longioribus, glaberrimis, junioribus in antherium lineare antheram superans productis quod postea marcescens ad antheram affingitur, antheris 2-lobis cordatis pilis albis presertim ad basin marginesque saccarum hirtis, junioribus hiæc pilis arcte coalitis post impregnatione discedentibus, polline ovali. Pistillo glaberrimo ad basin ovarii disco luteo circumdato ovario conico 1-loculari placentis 4. Stylo staminibus longiore medio angustato, curvato, stigmatе in apice clavato styli glanduloso.

Crescit in radicibus *Calatropidis Hamiltonii* in arenosissimis *Malvæ* Scape 1-3 pedali crassissimo, bracteis inferioribus sæpius efloratis.

Plantago bauphûla, (*mihl.*)—*indica* — ?

Caulibus decumbentibus ramosis subhirsutis foliis alternis ample canibus, lineari-lanceolatis distanter denticulatis, sub-carinatis, pilis raris apice articalatis hirsutiusculis pedunculis axillaribus foliis longioribus minute hirsutis vel subglabris viridibus vel purpurascentibus, spicis confertifloris ovatis, bracteis unifloris costis viridibus marginibus latis scariosis inferioribus carinatis apiculatis majoribus (at non foliaceis) sepalis 4. rotundato-ovatis, 2 exterioribus inferioribusque bracteiformibus costa viridi, 2, interioribus omnino membranaceis.

Corollæ limbo 4-fido, segmentis ovatis acuminatis scariosis, staminibus in fauce insertis, filamentis filiformibus purpureis segmentis corollæ æqualibus, antheris ovatis versatilibus luteis, stylo exserto apice hirsutiusculo; capsula membranacea ovata versus fundum circumscissa, rosea, seminibus 2 naviculiformibus, albumine concavo ovato embryone centrali immerso radicula inferiore, cotyledonibus linearibus placentâ centrali ovatâ crassiusculâ in medio laterum in valle lineari excavata propter receptionem embryonis, posterioris in fructu membranacæ. *Malwâ* et *Pentapotamiâ*.

Salsola láná, (*mihl.*) nomine *Indorum* — ?

Frutescens ramosissima, foliis breviter petiolatis cylindraceis vel ovatis, rectis vel falcatis, acutiusculis vel obtusis, floribus 3-4 glomeratis axillaribus sessilibus, sepalis 5 concavis rubris, stamina iis opposita tegentibus filam 5: brevibus antheris viridibus styli 2-3-4. brevibus rectis exsertis ovario unico.

Fructum maturam non vidi.—*Malwâ* et *Pentapotamiâ*.

II.—*Extracts from the MOHIT (the Ocean), a Turkish work on Navigation in the Indian Seas. Translated and Communicated by JOSEPH VON HAMMER, Baron PURGSTALL, Aulic Counsellor, and Prof. Orient. Lang. at Vienna, Hon. Memb. As. Soc. &c. &c.*

FIRST CHAPTER.

OF THE NAMES OF THE SKIES, AND THE STARS ; OF THE ELEMENTS, AND WHAT BELONGS TO THEM.

FIRST SECTION. *Of the skies, stars, and elements.*

Be it known that all the skies are perfectly round in convexity and concavity each between two parallel surfaces ; their centre is that of the world ; they are nine in number, are called the ' universal skies,' and are comprehended one within the other. The four elements are within the concavity of the lunar sky, and have fixed themselves in the middle of the terrestrial globe because gravitating like all bodies towards the centre of the world, they found their repose there. According to the expression of philosophers the earth is surrounded by the water, but the surrounding is an imperfect one, because, according to the opinion of old sages, the fourth part of the northern side of the earth is shining forth ; the modern philosophers say more, and in fact, the Portuguese have found on the west of the Canarian islands a new continent which they call the New World, and which is drawn up in the maps of our time ; we will mention it, please God, with more detail, in the chapter of the Indian islands.

The water and the earth form together one globe ; the cause that the earth came forth of the water, is only God's grace, who raised towering mountains, and sunk flat valleys to make them the abode of animals and plants. The earth shone forth by the natural inclination of the water to descend to the deeper grounds, the effect of which was, that the higher places remained uncovered with water. Some say that there are six hundred species of animals on the continent, and eight hundred in the sea. The Sheikh, author of the *Shefu* has said of the animals : that all those who have ears propagate by birth ; and those which have only auricular holes, by eggs. The eggs are of two species—those the shell of which is hard, have two colors ; one, that of the interior part and the other of the exterior covering ; but those, the shell of which is tender, are but of one color and have no exterior hide ; as the eggs of the fishes. After the terrestrial globe comes the aerial, after it that of fire ; then the skies of the moon, mercury, venus, sun, mars, jupiter, saturnus, that of the fixed stars, and the greatest sky which is called *Atlas*. The reason that the universal skies are in the

number of seven, lies in their different motions. The proof of it is that the before-said planets cover one the other. The covering sky is the inferior and the covered one the superior.

The stars are divided in three classes. The first : the seven planets every one of which is moving in its proper sky. The second class are the fixed stars, which are real stars like the planets, and which are all fixed in the eighth sky. The third class are only imaginary and not real ones ; these are the two points which are called the poles. The two poles of the greatest sky, make the difference between east and west. In the same manner there are in the ninth sky two insensible points ; all the stars are fastened in the globe of the skies like the stone in a ring. Their rising and going down is fixed by returning cycles. The line which passes through the two poles is called the axis محور. In order to go on in the operations of this science it is necessary to name the four great circles which are the *meridian*, the *equator*, the *horizon* and the circle of *height**.

SECOND SECTION. *Of the divisions of the circle of the sky.*

The learned in nautical science agree that the circle of the sky, that is to say, the horizon, is divided into thirty-two parts, called *khan†* ; because the ship can go in thirty-two directions, which applied to the horizon make these thirty-two divisions, every one of which is named after a particular constellation to which seafaring men have given a particular name. So they call in Turkey the north, *Yildiz*, which the masters of the Indian seas call *Kutb Jáh* قطب جہا. So the *two calves* (β . and γ . in *ursa minor*) are true north, the rising point of them is N. by E., the setting point of them N. by W. The rising point of the bier (the square of *ursa major*) N. N. E. ; the setting point of the bier N. N. W. The rising point of the camel (β . in Cassiopeia :) N. E. by N. The setting point of the camel, N. W. by N. ; the rising point of Capella N. E. ; the setting point of it N. W.—The rising point of the falling eagle (α in the lyra :) N. E. by E., the setting point of it N. W. by W.—The rising point of Spica E. N. E. ; the setting point W. N. W. The rising point of the *Pleias* E. by N. ; their setting point W. by N. The rising point of the eagle *true east*, the setting point of it, *true*

* دایره ارتفاع This we presume is any circle passing through the *Zenith* of a place, on which altitudes above the horizon are measured.—ED.

† خن Perhaps the Persian word *khāneh*, place, house, division, or *khand* from the Sanskrit खण्ड part, division.—ED.

west. The south is in *Asia* minor and *Roomeli* generally called the *Kibla*. The master of the Indian seas calls it *Kutb-ı-Sohail*, that is to say, *the pole of Canopus*. The rising of *Solbar* or *Solibár** (which seems to be *al-Phard*) S. by E.; the setting point of it S. by W. The rising point of the two asses (γ and δ in Cancer :) S. E. by S., the setting point of it S. W. by S. The rising point of the scorpion S. E.; the setting point of it S. W. The rising point of the crown S. E. by E.; the setting point S. W. by W. The rising of Arcitenens E. S. E.; the setting point of it W. S. W. The rising point of the twins E. by S.; the setting point of it W. by S. These are the names of the thirty-two *khans* (points of the compass). The middle point of two khans is called the half of a khan, and the middle point of this is called the quarter of a khan. The word *karta* كرتة is but a corruption of the word قارئة *quarto* which in the language of the Franks signifies the fourth part. The denominations of the khans after the rising and setting of the above named stars, belongs to the Indian seas and the denomination is only approximative and metaphorical, and not real. The division is taken from the compass, which in *Turkey* is known by the name of *Pussola*†. The above mentioned names are not used in the white and black sea, where *Ursa major* and *minor* are continually in sight, but where *Canopus*, *Salibár* and the *Aselli* are not seen rising and setting; the names used in the Turkish seas agree with the points of the horizon, independent of the rising and setting of stars; this way is by far the more easy, because there are only eight names of winds, the middle and quarters of them, which makes ten words fifteen rising points (the setting points not counted :) the northern pole and the south pole, altogether seventeen names which it is easy to retain. It is by far more easy to say *east by north* or *west by north*, than to retain in memory the rising and setting points of the pleiades.

The THIRD SECTION explains the Isbd, اسبع; and the middle of the Khans.

The circumference of the circle (globe) is of 360 degrees, each degree 66 $\frac{2}{3}$ miles, the whole circumference 24,000 miles; each degree has 22 $\frac{1}{2}$

* *Solbár* not *Salibár* is the true vocalisation. [The navigators call it *Sa-hbár*.—ED.]

† From the Italian or Portuguese *Bussola*, which the late M. KLAFFROTH does not allow to be derived either from *Bossola*, a box, or the old English *Boxel*, but rather from the Arabic مرسلة pronounced *Moússala*, the point, or pointer. The present example however in which the word is written with a *p* rather proves that both the Arabic terms *Pussola* and *Moússala* are corruptions of *Bussola*.—ED.

farsangs; the whole 8000 *farsangs*. An *اصبع* is formed by $1\frac{1}{2}$ degrees*. Eight *ذام* *zams* make one *isbd*, and again $4\frac{1}{2}$ *zams* one degree; 114 $\frac{1}{2}$ miles are one *isbd*, 14 $\frac{1}{2}$ miles are one *zam*; one degree contains seven parts of the twelfth of the *isbd*; so the whole circumference contains 210 *isbd* or 1680 *zams*, the middle of two *khans* is $6\frac{1}{2}$ *isbd*; counting by degrees, $11\frac{1}{2}$ degrees; the whole circle 210 *isbd* at our time, but in ancient times the middle measure of each *khan* was 7 *isbd*, therefore the circle contained 224 *isbd*; the first is the better computation which is proved by the difference of the greatest and lowest height of بدرماري which is but of four *isbd*s. Astronomers know that from the rising of *Judda*, that is the polar star, to its setting, 6 degrees and 6 *isbd*s are counted, each *isbd* being $1\frac{1}{2}$ degrees; but the rising and setting of *Judda* is not always the same because its motion follows that of the sky of the fixed stars, by which, in the course of time, the distance of it from the meridian becomes greater and sometimes smaller, according to the pole of the world; in our time it is so trifling that it makes no difference.

Be it also known that the *isbd* is of two species; the one, that used by the masters of the seas; this is the fourth part of the distance between *Capella* and *دبان* (the two *Ursæ*); the masters measuring with their instruments reckon this distance to be four *isbd*. If the measurement is taken in *هجر* ($\xi\gamma\eta$ *Leo*) and that the measure is neither too large nor too narrow. The distance between *Capella* and the two *Ursæ* is four *isbd*. The second species of *isbd* is not the nautical but geometrical one, which is the breadth of six moderate grains of barley; according to the systems of the moderns, 24 *isbd* or inches make one yard (*ذراع*) and 4000 yards one mile, and three miles one *farsang*.

The FOURTH SECTION, explains the distance of the stars, which are used to measure the khan from the meridians and from the pole.

The distance of the polar-star is $86\frac{1}{2}$ degrees; the distance of the two calves ($\beta\gamma$) 77 degrees, the distance of the first star of the square of *Ursa minor* مقدم *تذنين* 66 degrees; the distance of منير *ناق* 52 degrees; of *Capella* 45 degrees; of *Lyra* $38\frac{1}{2}$ degrees; of *Arcturus* $29\frac{1}{2}$ degrees; of the *Pleias* $11\frac{1}{2}$ degrees; of *Aquila* 7 degrees. All these distances are northern. The southern ones are the following: *Solbar* called also *Mohannis*, that is to say, the perjurer 61 degrees. The reason of this denomination is because an Arabic tribe, having taken its rising for that of *Canopus*, swore that it was *Canopus*; which

* Should be $1^{\circ} 36' 25''$ since 224 *assaba* = 360 degrees.

was a perjury. The distance of *Canopus* is 52 degrees. As this is a most renowned star, the southern pole has taken its name from it; the distance of *الذئبة* which is the first of the two *Aselli*, 49 degrees; the heart of the *Scorpion*, (*Antares*) $24\frac{1}{2}$ degrees; the *Crown* 17 degrees; the *Arrow*, else called *Shaurani Yamani*, that is to say, *Sirius*, 16 degrees; *Djosa*, (the girdle of *Orion*), 1 degree. This last one though a northern one has been mentioned with the southern ones.

The distance between the north-pole and the polar-star (*Djäh*) is two *isbd*, some say that the difference is less. The distance between the pole and the star of the nail **كوكب مينج* is $8\frac{1}{2}$ *isbd*, the distance between the polar-star and the star of the nail $6\frac{1}{2}$ *isbd*; that between the polar-star and the greater of the two calves $7\frac{1}{2}$ *isbd*. Those distances were taken by the former masters, with the instruments made by themselves by which the elevation of the stars was at variance, which is not the case with the present instruments. The distance from the stars to the meridian and the pole of the world is not always the same, because the stars move with the eighth sky, so that by its motion some northern stars become southern ones and vice versa, so that the stars which in the zodiac are now seen in the beginning of *Capricornus*, may fall into the beginning of *Cancer*, the distance of which is nearly 48 degrees. The rest may be guessed by this, but in our times the operations are sure.

The FIFTH SECTION explains the instruments of measurement.

The first instrument which the ancients used, consists of nine tablets, or boards, *أشج*, the first of which, of the size of man's little finger is divided in four folds† (*مشكن*), each of which is called one *isbd*, that is to say, that the first tablet is reckoned to be four *isbd*. Be it known that each pilot takes the tablet according to his hand, so that if he is a tall man the divisions happen to be great, and if he be a short man they are small; therefore a difference must necessarily occur and the operation is not sure‡. The distance between *Capella* and *Dobban* (*دببان*) which in the lunar stations fall in *الجبته* (♌ of *leo*) is just four *isbd*§; which agrees with the above measurement taken by the hand.

* This may be γ cephei of our globes by its relative distance from polaris and the pole.—ED.

† Shikan may here be translated rather a groove or furrow.—ED.

‡ i. e. If the instrument of one man be used by another.—ED.

§ The star here called *Dobban* must be understood, not as *Dabbe*, β aurigæ which is $7^{\circ} 45'$ distant from *Capella*, making the *isbd*— $1^{\circ} 55'$,

The second tablet or plate is one *isbd* more than the first and so on, until the ninth. Through the middle of this tablet passes a thread so that it increases from the first to the second table half an *isbd*, and so on to the ninth; by this the elevation of the stars is taken*. Be it known that the measurement of the ninth table is according with the first plan. *Capricornus* having the smallest elevation†, it will be found there to be 12 *isbd*. In the 8th table, 11 *isbd*, and so farther on till the first, where its elevation is four *isbd*. In the same way the *calves*, the four stars of the square of *Ursa minor* and the elevations of the other stars are calculated. The method of taking the measure is as follows:—You take the table with the left hand and the thread that passes through their middle in the right; you stretch your left hand firm and take the elevation which gives four *isbd* for that of *Juddi* (جدي).

The moderns use to the same purpose a bar لوح, three or four spans long, which they divide in five parts; one part forms a tablet لوح the breadth of which is the half of its length, that is to say, the fifth part of the half; a thread passes through the middle. The bar is divided in twelve parts and where it cuts off six parts a knot (or division) is made. The pilots begin their measurement from this knot, *Juddi* having the smallest elevation. The distance between the circle of the horizon is twelve *isbd* and at this time the stations *Isarfa*, (β in the lion,) *Awwa*, (β in the virgin,) and *Semak* Spica; are near, that is to say, in the zenith; at this time *Juddi* is two *isbd*s below the pole of the world; the measure of an *isbd* is $1\frac{1}{2}$ degrees ($1^{\circ} 45'$); at that place the elevation of the pole of the world is 14 *isbd* or 24 degrees which is the greatest mile‡. The greatest elevation of *Juddi*, is that in the lunar stations *fēra el-mokaddam*, (α β in *Pegasus*,) and *moakhkhar*, (γ in *Pegasus* and α in *Andromeda*;) and *Resha*, (β in *Andromeda*;) there are according to this calculation six *isbd*: they call this measure, the original or fundamental measure; that is to say, two *isbd* above the pole of the world. You divide then this bar in eleven parts, throw five of them away and make a knot at the sixth, then remain 11 *isbd* for the elevation of *Juddi*. You divide again the bar in ten parts, throw away four and make a knot at the sixth which gives the elevation of ten *isbd*. Then you divide it in nine parts, throw away three and make a knot at the sixth so that nine *isbd* remain for the elevation. Again you divide it in eight parts, throw away two, make a knot at the

* See the subjoined note.—ED.

† For 'smallest' I should here desire to read 'greatest'—the meaning being, that according to the estimated elevation is the *loh* to be selected.—ED.

‡ Perhaps the extremity of the scale should be understood by this expression.

sixth, so that eight *isbâ* remain for the elevation. You divide it then in seven parts, throw away one making a knot at the sixth, in which case the elevation of *Juddî* remains seven *isbâ*. You divide it again in seven (six ?) parts, but you throw none away and make the knot at the end of the yard, in which case there remain six *isbâ* for the elevation. Here the operation ceases; but all this is calculated on the lowest elevation of *Juddî* which is the original measure. The way of measuring with the above said thread and table *لرح*, is the following: first you take the tablet in your left hand, take hold of the first knot with your teeth, stretch forth your hand, don't twinkle with the left eye, and take the elevation so that *Juddî* is above and the horizon below, no more and no less. At this time the arc of elevation between the horizon and *Juddî* is 12 *isbâ*; each time that a knot is added an *isbâ* is lessened till at last there remain six *isbâ*, and here ends the operation with the length of the table or bar. If you wish to operate with its breadth it is as follows: at the knot made for the elevation of twelve *isbâ*, that is to say, at the half of the yard the elevation of *Juddî* according to the measure of the breadth of the table, is again six *isbâ*. Be it known that if you are operating with the breadth and a knot is added, the elevation loses half an *isbâ*, so that it comes at last to three *isbâ*, in which place the northern pole is five *isbâ*. From this place the equator is distant 40 *zâim*, which makes nearly 570 miles and the original measure (*قياس اصلی*) is here at an end, because *Juddî* being in the original measure near the horizon its measurement is not just. They call this the original or fundamental measure because *Juddî* is beneath the pole of the world in the lowest elevation opposite to the pole. Besides this they take the measure by the *Parkadain*, the *Naash*, and other stars.

The SIXTH SECTION explains the calculation of the greatest elevation of the stars.

The way is this: you add the distance of the star in the northern quarter to the latitude if it has a northern distance, and you subtract it if it has a southern distance, and the result of the addition or subtraction is the elevation of the star; if it exceeds 90 degrees you throw it away from the half circle and what remains is the greatest elevation; in the southern quarter the operation is quite the reverse. If you wish to change the degrees into *isbâ*, you know by what has been said that one *isbâ* is $1\frac{1}{2}$ degree, so that it is easy to make out the *isbâ*; but in order to calculate just the elevation of the stars it is necessary to know to a certainty the distances. Be it known that as the stars move

with their skies their distances are sometimes different which must be known for the purpose of operating.

Note on the above chapter. By JAMES PRINSEP, *Sec., As. Soc. &c.*

The first chapter of the Mohit, as I anticipated, explains all the allusions to the stars, the points of the compass, and the methods of measuring the latitude, which were so difficult to understand in the chapters of voyages first translated; while the examination of the *Arab* and *Maldivé quadrants* (if they may be so called) to which I was led in order to understand the nature of the 'celestial inch' or *isbd*, &c. has prepared me to comprehend at once the descriptions in the present chapter which, as the Baron states, "are quite incomprehensible without the knowledge or sight of the instrument itself, which no doubt must be actually known by Indian or Arabic masters*."

The first question to be solved is what are the actual stars corresponding with the designations adopted in SIDI's work, as well as on the Arabic compass? The fourth section furnishes the data for the solution of this point, for it contains, not the azimuthal positions of their rising and setting, but their absolute declination north or south of the equator. But to compare these declinations with our present tables allowance must be made for the *annual variation* in declination for the time elapsed since SIDI's tables were framed. To find this epoch we may take the declination of Polaris, \star , which is given in the text as N. $86^{\circ} 30'$, whereas on the 1st January 1839† it is by the nautical almanac, N. $86^{\circ} 27'$. The difference, $1^{\circ} 53' = 6780$ seconds, divided by $+19''.3$ the annual variation of this star, gives 353 years prior to 1839 as the epoch, or A. D. 1486. SIDI's book was written in 1554, but it was compiled from ten works of preceding authors, five of them ancient, and five modern. The tables he consulted were probably much anterior, perhaps those of ULUGH BEG (A. D. 1437), or of NASIR UDDI'N TU'SI', astronomer to the Mongol Halagu Khan at *Tabriz* in A. D. 1264. It is impossible to expect much accuracy where the text does not pretend to come nearer than the half of a degree, but still as we have sixteen stars we may apply the BENTLEY method of minimum errors to find the date:

* On board the *Futle Barry*, (*Fatih-ul bárt*) I could find none of these instruments—nor were the points of the ancient compass known—all is now English in Arabic navigation.

† I make use of this epoch because I happen to have on my table a Greenwich Ephemeris for 1839, and none for the current year.

| Arabic name of star. | Arabic declin. | Star supposed to be intended. | Declination 1st Jan. 1839. | Diff. of declination. | Year of agreement with Arabic declin. |
|---------------------------|----------------|-------------------------------|----------------------------|-----------------------|---------------------------------------|
| 1. الجدى | N 86° 30' | Polaris, | N 88° 27' | + 1° 57' | + 19.73 1486 |
| 2. القرد | N 77 | 0 β Ursa minoris, | N 74 49 | - 2 11 | - 14.7 1305 |
| 3. مقدم ندين | N 66 | 0 α Draconis, | N 64 53 | - 1 7 | - 18.0 1606 |
| | | or α Ursa maj. | N 62 37 | - 3 23 | - 19.2 1205 |
| 4. منير الناقة | N 52 | 0 γ Ursa maj. | N 50 7 | - 1 53 | - 18.1 1465 |
| 5. العيوق | N 45 | 0 Capella, | N 45 49 | + 0 49 | + 4.7 1235 |
| 6. الواقع | N 38 | 30 α Lyrae, | N 38 38 | + 0 8 | + 2.7 1660 |
| 7. السماق | N 23 | 30 Arcturus, | N 20 1 | - 3 29 | - 18.9 1276 |
| 8. الذئب | N 15 | 11? Aldebaran, | N 16 11 | + 1 9 | + 7.9 1384 |
| 9. الطائر | N 7 | 0 α Aquile, | N 8 27 | + 1 27 | + 8.7 1239 |
| 10. الجوز | S 1 | 0 δ Orionis, | S 0 25 | - 0 35 | - 3.1 1159 |
| 11. الصمري | S 16 | 0 Sirius, | S 16 30 | + 0 30 | + 4.4 1430 |
| 12. الكليل | S 17 | 0 β Scorpionis, | S 19 21 | + 1 21 | + 10.3 1018 |
| 13. الحنوب | S 24 | 30 Antares, | S 26 4 | + 1 34 | + 8.3 1191 |
| 14. الطليم | S 49 | 0 α Grulis, | S 47 44 | - 1 16 | - 17.3 1575 |
| 15. السهيل | S 52 | 0 Canopus, | S 52 36 | + 0 36 | + 1.8 639 |
| 16. سليبار | S 61 | 0 Achernar? | S 58 3 | - 2 57 | - 18.9 1282 |
| Average year of agreement | | | | | 1282 |

The average epoch of the Arabic tables is then A. D. 1282 or almost precisely that of NASIR UL DIN TU'SI' before mentioned. The greatest discrepancies are naturally found in the stars of least annual variation; because half a degree, the limit of accuracy in the Arabic column, is in such cases equal to several centuries:—thus for Rigel, with annual variation of three seconds we cannot expect to come nearer than $1800'' \div 3'' = 600$ years, nor in Canopus than $1800'' \div 2'' = 900$ years!

It will be remarked that I have in some instances been obliged to abandon the usually received equivalents of Arabic stars, and to select others that were more conformable to the conditions. Of the *fargha-*

dein, (β and γ Urs. Min.) only the former would answer. No. 3 is translated 'the firststar of the square of *Ursa minor*,' but no star of that constellation has the necessary declination; as the square of *Ursa major* has the same name in Arabic النعش, I have inserted α Urs. Maj. the principal star of the square, to shew that it will answer perfectly, but if I have read the Arabic name right (for in the manuscript it has no points to the letters). it should be 'the leading star of *sinia*,' the dragon, to which I have accordingly given the preference, though it does not furnish so good an epoch. منيرباقة 'the bright star' of the she-camel I can identify with no other than the extreme star of the tail of the great bear, the last of the *three* 'daughters of the bier,' and itself named *binât-ndsh* on our globe. I formerly thought it was عناق the second star, but this is 5 degrees too far north. The Arabic globes and tables write القايد 'the leader' in lieu of الناقة. β Cassiopeie the star suggested by M. VON HAMMER is 8 degrees too far northward.

Of Capella, Vega, and Arcturus there can be no doubt: but the next of the series, translated *Pleias* by the Baron with a north declination $11^{\circ} 15'$ cannot certainly represent the *Pleiades* which are in 23° north. I have, as on the former occasion, preferred Aldebaran (the bright star of the *Hyades*) whose name, الثور the bull, does not much differ from الثريا the pleiades: but for this interpretation it is advisable (though not necessary) to read $15^{\circ} 11'$ instead of $11^{\circ} 15'$, for the declination.

To *Jozeh*, if it were to be taken in the usual acceptance of a contraction of *Rijal uljozeh* (our Rigel) we should be constrained to allow a correction, from 1° to 10° south declination which would bring it to the compass azimuth of E. by S.: but the text mentions its being out of position and rather a northern star or one close upon the equator, so that we may safely assume it to be γ Orionis as in the above table, without altering the text. The southern crown on our globes is far too south for the اكليل of SIDI, or of the compass, which is evidently الكليل العقرب, or β Scorpionis. Antares is not liable to mistake: but there is some misapprehension in regard to *Zalim* ظليم. The Baron translates it 'the first of the two Aselli' (حمارين): now the Aselli are two small stars in Cancer, in 19° and 22° north declination, whereas *Zalim* is in 49° south. Again Dr. DORN* states Fomalhaut of the *Piscis Australis* to be denominated ظليم on the Arabic globe, but this again is still 18 degrees too northerly. My own opinion was before given in favor of α and β Gruis for the *Hamárein*, and the declination, now furnished by SIDI, corroborates my selection, which is further confirmed

* Transactions Royal Asiatic Society, vol. II. page 392.

by the Arabic appellation *zalim*, which signifies 'a male ostrich,' not much differing from *grus* 'a crane.'

Canopus is too notorious a star to admit of any doubt, except to the perjured Arab tribe! but its annual variation is too small to yield fair data for calculating the epoch of the tables.

For the last of the list, *Salibár*, I before wavered between α Eridani and γ Argus, and I should be able to propound a plausible excuse for the Arab tribe's mistake, (were the latter to be found correct,) in the discovery lately made by Sir JOHN HERSCHELL at the Cape, of the variable brilliancy of this star 'which in a few months had come to surpass all the stars of the first magnitude except Sirius, Canopus, and α Centauri*:' but when tried by the test of the minimum errors it is found wanting. In 1839 it has S. Declin. $58^{\circ} 50'$, with annual increase of 18.8 seconds, so that in the 14th century it would be 5 degrees too far north,; whereas *أخر النهر* or Achernar precisely corresponded with the Arabic declination in 1288 A. D. The Baron's suggestion of *Alphard* (β Hydræ) is quite untenable, that star having only $7^{\circ} 57'$ south declination.

The present section in addition to the above valuable information, tells us why the south pole has been called *Soheil*†. It is a contraction of *qutb i soheil*, or pole of Canopus, to distinguish it from *kutb i jáh*, the north pole.

There is no latitude in which the several stars, as now determined can be made to rise and fall in their assigned positions on the horizon: the names were purely conventional, yet in the latitude of 15° north a good many of them find their proper places,—as if the system had been first framed at *Loheia* in the Red Sea, *Saibán* of the ancients, which is the starting point of all SIDI's voyages to India, and we have seen many of the terms quoted as "used by the Indian masters."

I should here correct a serious mistake made in my former notice, in supposing that the ancient Arabs like the modern navigators, or the Hindus, considered the polar star to be immovable. The chapter before us proves that its polar distance was known and measured, as well as its secular variation and the precession of the equinoxes. Their accuracy only was deficient for the want of good instruments: thus in the tables of MUHAMMAD TIZINI published in *Sharpe's Syntagma Dissertationum*, T. HYDE, we find the polar distance of *Judda* in A. H. 940 or A. D. 1533 registered as $26'$ further from the pole than in SIDI's work, instead of nearer. In general however MAH. TIZINI's places of the stars lie between SIDI's and the modern tables. Thus, β Ursæ minoris is

* See Proceedings of the Asiatic Society, page 463 of this volume.

† See note on Maldivé compass, vol. V. p. 764.

respectively 77° , 76° , and $74^{\circ} 49'$ in the three :— α Lyrae, (*vega*.) is $38^{\circ} 30'$, $38^{\circ} 37'$ and $38^{\circ} 38'$;—Aldebaran is $11^{\circ} 15'$ (? $15^{\circ} 11'$), $15^{\circ} 43'$, and $16^{\circ} 11'$;—and α Aquilæ $7^{\circ} 0'$, $7^{\circ} 24'$, and $8^{\circ} 27'$ in the *Mohit, Mah. Tisim's* tables, and the Naut. Alm. for 1839, severally.

I now proceed to make a few remarks on the FIFTH SECTION which affords some curious though brief information on the nautical instruments of primitive use. I certainly imagined that nothing could be more primitive than my Maldivé friend's *kamál*—a bit of horn with a knotted string passing through its centre, depicted in fig. 1, Pl. XLVIII. of vol. V. when lo! here is something even less advanced in ingenuity! Instead of dividing the string and making one board or tablet (*loh*, لوح) answer for all, it seems to have been an anterior plan to have nine boards differing in diameter one finger (*isbd*) each; the lowest having four *isbds* in breadth; the largest, twelve. These were all strung on one string, as long as the stretch of a man's arm; and that board was selected in applying the instrument to use, which just covered the space between the star and the horizon. From the passage in the text it is evident that this series of boards was in fact but a substitute for the more primitive employment of the fingers in the measurement of celestial altitude. The fingers had however one advantage,—that stretched at the length of the arm, as radius, they could be placed in a curve, so as to represent equal portions of an arc; whereas when fingers' breadths were transferred to flat wooden boards they became either sines, tangents or, at the best, chords of the angle measured. It was to correct this (as I imagine) that the string was shortened by the thickness of the board (half an *isbd* ?) for each successive *loh*, as they decreased in breadth; and I have taken the trouble to calculate the effect on data furnished by my own arm and fingers, whence I set down—radius = 27 inches; and *isbd* = $\frac{1}{2}$ inch. The data therefore for each board or *loh* will be as follow:

| Radius increasing by half an <i>isbd</i> in inches. | No. of the <i>loh</i> or board. | Breadth Equal to of the <i>loh</i> in inches. | Angle deduced. | Difference or value of one <i>isbd</i> . |
|---|---------------------------------|---|----------------|--|
| 24.04 | 1 | 3.00 | .1247 | 7 10 $\div 4 = 1 47\frac{1}{2}$ |
| 24.41 | 2 | 3.75 | .1536 | 8 50 |
| 24.78 | 3 | 4.5 | .1815 | 10 27 |
| 25.15 | 4 | 5.25 | .2087 | 12 3 |
| 25.52 | 5 | 6.0 | .2350 | 13 36 |
| 25.89 | 6 | 6.75 | .2607 | 15 7 |
| 26.26 | 7 | 7.50 | .2856 | 16 36 |
| 26.63 | 8 | 8.25 | .3098 | 18 3 |
| 27.00 | 9 | 9.00 | .3333 | 19 28 |
| Average of 12 <i>isbd</i> | | | | $1^{\circ} 37' 20''$ |

It is evident that half an *isbd* is a great deal too much for the thickness of the plates or shortening of the string—I have calculated what it ought to be so as to afford the proper correction for the diminution of the sines, and find it only a *twentieth*, instead of *half*, of an inch; thus, making the *isbd* = $1^{\circ} 36' \frac{1}{2}$ we should obtain the following lengths of the arm or radius; the *isbd* being assumed as before at $\frac{1}{2}$ th of an inch:—

| No. of
plate or
lob. | Angle
subtend-
ed. | Sine of
ditto. | Depth of
the lob in
inches. | Radius deduced =
$D \div \sin. \sqrt{\text{all.}}$
inches. | Thickness
of plate.
inoh. |
|----------------------------|--------------------------|-------------------|-----------------------------------|--|---------------------------------|
| 1 | 6°26' | .1120 | 3.00 | 26.78 | .08 |
| 2 | 8 2 | .1397 | 3.75 | 26.86 | .07 |
| 3 | 9 37 | .1670 | 4.50 | 26.93 | .06 |
| 4 | 11 13 | .1945 | 5.25 | 26.99 | .06 |
| 5 | 12 49 | .2218 | 6.00 | 27.05 | .06 |
| 6 | 14 25 | .2489 | 6.75 | 27.11 | .06 |
| 7 | 16 2 | .2761 | 7.50 | 27.17 | .06 |
| 8 | 17 38 | .3029 | 8.25 | 27.23 | .06 |
| 9 | 19 15 | .3296 | 9.00 | 27.29 | .06 |

The next instrument described in the fifth section, does not require much notice since, it is precisely the *bilisty*, or square rod with a slide, depicted in Pl. XLVIII., fig. 2. p. 786, and the mode of laying off the divisions agrees with the plan detailed by my *Maldivie* informant. There seems however to be some unaccountable jumble of the divided rod (*gay*) and the knotted string, unless the word translated knot may also signify (as is probable) a division cut on the wooden bar. The application of the breadth of the tablet for measuring lower altitudes with the same knotted string is of course only an approximation, but quite near enough for practice. The zero point (6 *isbd*s) is explained to be the lowest altitude of Polaris = $10^{\circ} 30' + 3^{\circ} 30' = 14^{\circ}$; once more nearly conformable with the latitude of *Loheia*.

It is possible that the greater magnitude of the ancient *isbd* may have proceeded from the practice of taking the polar distance of Polaris as a constant of two *isbd*: thus in 1394 it would be $3^{\circ} 52' \div 2 = 1^{\circ} 56'$; in 1550, $1^{\circ} 33'$, &c. Even in the chapter before us hardly any two estimates of the *isbd* agree; in one place 210, in another 224, make 360 degrees; in the division of the *gay* and string, the measure will be $1^{\circ} 52'$: in other places it is reckoned $1\frac{1}{2}$ degree or $1^{\circ} 43'$.

The FIFTH SECTION enlightens us further on the zero point of the *isbd* scale, which on the former occasion I deduced, from the *isbd* latitudes of places in the Red Sea*, to be $5^{\circ} 30'$ nearly. It says that in taking the altitude of Polaris (always, as I guessed, at the inferior passage) when it comes at last to three *isbd* (the pole being then five *isbd*)

* Vide vol. V. page 444.

the scale ceases, because the star is too near the horizon to give accurate results. Now 3 *isbd* at $1^{\circ} 43' = 5^{\circ} 9'$ to which adding $3^{\circ} 26' = 8^{\circ} 35'$ latitude; and 570 miles, the distance from the equator corresponding, gives a latitude also of about $8^{\circ} 30'$. In the table I constructed from the voyage latitudes I should have added a constant of $3^{\circ} 26'$ to the absolute latitude of each place as the altitudes of Polaris were supposed to be taken at its inferior elevation.

The SIXTH SECTION merely gives directions for calculating the meridional altitude of stars, in order doubtless to obtain the latitude, at sea. Here instead of north and south declination, the term *distance*, quasi *north polar distance* is alone employed; the rule being for stars north of the zenith; *Altitude* = *N P D* + *Latitude*; and for those south of the zenith, *Alt.* = *Latitude* — *N P D* (-90) which is unintelligible; it should be *Altitude* = $180^{\circ} - \overline{N P D} + \overline{Lat.}$; or latitude = $180 - \overline{Alt.} + \overline{N P D}$. Perhaps by *southern distance* is meant *south polar distance*, when the rule becomes *S P D* — *Alt.* = *latitude*. The *isbd* is here again quoted at $1^{\circ} 43'$ and the importance of having good tables of the stars is insisted on.

I have got through my comment without consulting any native navigator, for the season of Arab and *Maldivé* monsoons is hardly yet arrived.—But as I have already remarked, the present chapter exhibits far less difficulties than the others did in the absence of this, which contains the very particulars we there wanted.

III.—*Epitome of the Grammars of the Brahuiky, the Balochky and the Panjābi languages, with Vocabularies of the Baraky, the Pashy, the Laghmāni, the Cashgari, the Teerhai, and the Deer Dialects. By Lieut. R. LEECH, Bombay Engineers, Assistant on a Mission to Kābul.*

A VOCABULARY OF THE LAGHMĀNI DIALECT.

Introduction.

Laghmān is a province (*mahāl*) of the principality of *Cabūl*, situated opposite to *Jalālābad*; it is sometimes written *Lamghān*. It yields a revenue of 1,13,000 rupees, and is included in the government of MUHAMMAD AKBAR KHĀN, the favorite son of AMĪR DOST MUHAMMAD. The inhabitants of Laghmān are Tājaks or Farsiwāns.

Vocabulary.

| | | |
|---------------|------------------------|---------------|
| Laè, day | Lām, fort | Làya, brother |
| Atth, hand | Katī, tree | Warg, water |
| Kitālik, girl | Bakār, good | Ā, ù, bread |
| Āe, mother | Vell, night | Gūng, horse |
| Sāyā, sister | Bālākūl, boy | Ghorā, horse |
| Angār, fire | Bàbā or tātīyā, father | Nākār, bad |

| | | |
|---------------------|---------------------|---------------------|
| Nandi, river | Chap, left | Bār, fruit |
| Shotik, she-goat | Drogh, false | Akude, below |
| Lāwegā, pain | Kam, little | Durā, out |
| Lodi, wood | Mandā, neck | Pām, broad |
| Nāni, butter | Baghāl, armpit | Kamān, bow |
| Ave, flour | Pindi, calf | Khām, raw |
| Golāng bull | Aneh, eye | Janāwar, beast |
| Gās, grass | Kāq, ear | Limbe, tail |
| Adam, man | Dān, tooth | Peṭhār, shoes |
| Panj, husband | Dād, beard | Tunā, thirst |
| Shelt, knife | Pā e, leg | Kanā, deaf |
| Swan, gold | Chāp, back | Kutā, lame |
| Pāchadā, he-goat | Podā, near | Patik, gone |
| Gāl, abuse | Khek, white | Mā e, moon |
| Wāgan, wind | Shūnek, red | Wākh, rain |
| Gūli, bullet | Alinā, green | Abli, cloud |
| Gom, wheat | Kāt, bedstead | Sum, hoof |
| Lon, salt | Chantalā, small | Pāchh, cotton |
| Gā, cow | Chāgh, fat | Sonā, thread |
| Māshi, woman | Mutā, short | Shāmek murch, black |
| Tik, wife | Kālā, cloth | pepper |
| Pulṭem, son | Sutān, trousers | Arūkh, leek |
| Chummār, iron | Khūdīnk, dog | Ko, thing |
| Mukhrā, silver | Māchh, fish | Shirin, sweet |
| Wād, stone | Kār, donkey | Shidāl, cold |
| Matāt, nose | Dūr, face | Gul, flower |
| U'kāt, lip | Dūr, mouth | Ude, upon |
| Jub, tongue | Rāt, right | Kuchai, in |
| Brāt, mustachoes | Rāt, true | Ligā, long |
| Āst, arm | Bo, much | Tīr, arrow |
| Kuchh, belly | Shānā, shoulder | Pachik, cooked |
| Dūr, far | Allakh, side | Paranagā, bird |
| Shāmek, black | Rān, thigh | Shākh, horn |
| Tāard, yellow | Sāng, earth | Kalachā, speech |
| Nil, blue | Shilā, mud | Avtā, hunger |
| Chhāl, hair | Thūr, sun | Andā, blind |
| Gand, large | Dūm, smoke | Gungā, dumb |
| Sannā, thin | Zalzalā, earthquake | Chhā, well |
| Ligā, tall | Gilāph, scabbard | Aik, come |
| Perānik, coat | Pasham, wool | Pākam, I go |
| Khādā, turban | Gambā, deep | Pagā, he goes |
| Pishūndik, cat | Pyāz, onion | Pākātha, ye go |
| Pe, meat | Pāki, razor | Pākai, dost thou go |
| Karatik, female ass | Sūnchik, needle | Pākāth, we go |
| Shir, head | Garm, hot | Pākan, they go |
| Norikh, nail | Khārgosh, hare | |

1 I

2 do

3 te

4 chār

5 panj

6 khe

7 thāt

8 akāt

9 no

10 de

11 yā e

12 duā,e

13 sepzdā

14 chadde

15 panjū

16 shānzā

17 abdā

18 hashda

19 nozda

20 vist

A VOCABULARY OF THE CASHGARI (PROPERLY KASHKARI) LANGUAGE.

Vocabulary.

| | | | |
|------------------------------|-----------------------------|---------------------------|-------------|
| Dāk, a boy | Bughā, be gone | Sūr, head | |
| Moasht, a man | Rūpā, get up | Kād, ear | |
| Lesūn, a cow | Peā, drink | Ghach, eye | |
| Astor, a horse | Dassā, take | Rikish, beard | |
| Ashpai, a sheep | U'gh, water | Dond, tooth | |
| Unth, a camel | Gomb, wheat | Ege, come here | |
| Chhānī, hair | Gumod, a girl | Hishik, sit down | |
| Pusha, cat | Kumedi, a woman | Ejube, eat | |
| Inch, forehead | Deshawa, a bull | Māth, with, give me | |
| Naskār, nose | Ghod dou, an ass | Maahr bā, goglet of water | |
| Barūp, eyebrow | Pai, a goat | Shāpikā, bread | |
| Shop, lip | Postam, wool | Karinj, rice | |
| Legin, tongue | Rain, dog | Mah, waist | |
| Siri, barley | Gharib, poor | Pāz, breast | |
| To kinī, who are you | Jil, veil | Bām, earth | |
| Chādūr, turban | Obistā, dead | Jind, bedstead | |
| Phadwāl, trousers | Zūm, mountain | Satāre, stars | |
| Chhān, take off (imperative) | Ingār, fire | Paghīd, curds | |
| Bizwa, thin | Chohistam, I am hungry | Paniyā, night | |
| Pong, foot | Ishgum, shall I eat | Dashmānirā, read | |
| Shurāk, thigh | Māsam lūdath, speak with me | Metāl, a great man | |
| Kāwānū, belly | Kisht, waistband | Māwlāt, country | |
| Gaul, neck | Perāhan, coat | Kosh, shoes | |
| Trishty, thirst | Anjam, put on (imperative) | Jinwāl, I, born | |
| Kāmān, heaven | Chale but, a fat man | Ult, round | |
| Shīd, milk | Husht, hand | Him, snow | |
| Chho, I, day | Mujastī, calf of leg | Jin, wood | |
| Dashmānī, reading | | | |
| Ange, come | | | |
| 1 I' | 4 chod | 7 sūt | 10 jash |
| 2 jū | 5 pūnj | 8 āneht | 20 jishl |
| 3 trū, I | 6 chū, I | 9 nephan | 100 do shām |

A VOCABULARY OF THE TIRHAI DIALECT.

Introduction.

The Tirhai language is at present confined to 3000 families, who abandoned their own country the district of Tirā on a feud breaking out between the Orakzais and Afridis, and settled in the province of Ninganhār. They figured in the religious revolution I am now about to mention.

In the reign of AKBER, when MIRZA HASN was Governor of Cabul, a holy man by name HISAMODI'N an Ansāri by caste came from Hindustān, where his forefathers had been left by TIMURLANG, to Afghanistan in which country he travelled and preached, and had succeeded in making many converts to the creed of the Shiāhs, to which sect he belonged; when AKHUN DARVEZA whose shrine is now at Peshāwar, arose

as his opponent, and as the defender of the orthodox faith of the Sunnis: HIS'AMODI'N had obtained the title of PI'R ROSHAN (father light) among his own sect, and that of PI'R TARI'K (father darkness) among the Sunnis. AKHUN DARVEZA petitioned the king who gave orders to the governor of *Cabul* to co-operate with him in exterminating the infidel Shi'ahs. These two laid many snares to entrap their opponent, who evaded their pursuit, accompanied by a body of 200 cavalry, by reversing the shoes of their horses. He escaped and his fate is not known; but his three sons were secured and put to death. The labors of PI'R ROSHAN were particularly successful in the district of *Ttrá*, where he had 60,000 disciples; who on the disappearance of their preceptor, returned to their former belief.

Vocabulary.

| | | |
|------------------------|--------------------|------------------------|
| Kuzà, horse | Taimbar, iron | Mùn, face |
| Bhadai, mare | Zyad, brass | Azi, mouth |
| Pàli, bread | Postakai, leather | Màs, meat |
| Wà, water | Parannazar, silver | Nukh, nail |
| Sinlh, river | Luhizar, gold | K'awai, right |
| Das, day | Bat, stone | Chap, left |
| Ràt, night | Achba, eye | Tsak, little |
| Bir ùkà, he-camel | Nasth, nose | Brokh, much |
| Strizy ùkh, she-camel | Kan, ear | Ogà, shoulder |
| Bira tainda, he-goat | Shunda, lip | Mare, neck |
| Strizy teall, she-goat | Danda, tooth | Allakh, side |
| G'awar, good | Zhibba, tongue | K'harg, armpit |
| Nàkàr, bad | Bret, mustachoes | Rùp, thigh |
| Ghodi, abuse | Hast, hand | Pondí, calf of leg |
| Bàli, wind | Pà, leg | Brich, tree |
| Nàr, fire | Tsat, back | Bhùm, earth |
| Ladà, wood | Damma, belly | Gad, mud |
| Brekàh, pain | Boga, near | Dùda, dust |
| Tarwali, sword | Dàr, far | Spagmai, moon |
| Dàl, shield | Paranna, white | Sàri, sun |
| Golai, bullet | Luhì, red | Barsat, rain |
| Dudh, milk | Zyad, yellow | Dhùng, smoke |
| Kuchh, butter | Kangana, black | U'ryaz, cloud |
| Gadh, clarified butter | Sen, bedstead | Zabzalà, earthquake |
| Ghom, wheat | Bàl, hair | G'awar kand, thunder |
| Dàdi, beard | Sùdà, little | Tandr, thunderbolt |
| Zav, barley | Ghapa, large | Padakahar, lightning |
| Lon, salt | Plan, fat | Nùkh, hoof |
| Go, bullock | Sùm, thin | Kayza, hut |
| Dhen, cow | Kathau, short | Tekai, scabbard |
| Ghàs, grass | Driga, tall | Màlùch, cotton |
| Strizy, wife | Tsabar, cloth | Pam, wool |
| Mhala, father | Piran, coat | U'zh guni, goat's hair |
| Mà, mother | Sathan, trousers | Zmarrai, tiger |
| Putur, son | Phagdai, turban | Gùgh, deep |
| Kumàr, daughter | Sanà, dog | Kangana mirch, black |
| Spaz, sister | Bilolec, cat | pepper |
| Bhàr, brother | Màhai, fish | Sùm, leek |
| Katàri, knife | Khar, donkey | Pyas, onion |

| | | |
|--------------------|-------------------|-----------------------|
| Kurkumand, saffron | Bitzo, monkey | Udhast, hunger |
| Spanai, thread | Ath, flour | Gushthàni, house |
| Biyàtai, scissors | Gul, flower | Tandrai, mouse |
| Katarl, razor | Bàr, fruit | Hindwàna, water-melon |
| Shai, thing | Phallà, grain | Ràgha, plain |
| Dhùng, needle | Drig, long | Kàrga, crow |
| Mrikht, sweet | Plan, broad | Morgha, bird |
| Tre, salt | Ghasha, arrow | Kàka, horn |
| Trikht, bitter | Ghurr, kamàn, bow | Phanai, shoes |
| Tattà, hot | Rast, true | Piratha, thirst |
| Shhal, cold | Drist, false | Oasai, deer |
| Sawe, hare | Pakkà, cooked | Ku,ai, well |
| Burod, wolf | Kma, raw | Ghar, mountain |
| Gldad, jackal | Rassai, rope | Bhàna, plate |
| Yaya, bear | Lakal, tail | |
| 1 ik | 7 sath | 13 tro |
| 2 dù | 8 àkkt | 14 tsoudà |
| 3 trà | 9 nab | 15 panzi |
| 4 tsor | 10 dah | 16 khod |
| 5 pants | 11 iko | 17 sate |
| 6 kha | 12 bo | 18 akhto |
| | | 19 kunnai |
| | | 20 bhyà |
| | | 30 bhyoudà |
| | | 40 dà bhyà |

A VOCABULARY OF THE LANGUAGE, SPOKEN IN THE HIGHLANDS OF DEER.

Vocabulary.

| | |
|--------------------------------|--------------------------------|
| Pand pishà, show the road | Chù ain pand, go this road |
| Pùch de, give a kiss | Buchhàkot, I am hungry |
| Maga, don't | Dàt, full |
| Shilchà oth, I am thirsty | Paneth, money |
| Bàl, hair | Jàth, wool |
| Ghat ag, whence have you come? | Andeshki chon, I will go there |
| Andefhtàg, I came thence | Gomb, wheat |
| Jib, tongue | Shid, milk |
| Masht, throat | Gad, clarified butter |
| Shalht, will you sell? | Ma,il, buttermilk |
| Màya, curds | Chond, writing |
| Chot, cheese | Chantà, alive |
| Bat, rice | An, bring |
| Mulland, dead | Jàl, light (imperative) |
| Pedàh, ill | Pisht, flour |
| Kichù, take away | Wàhe, water |
| Pachhà, cook (imperative) | I's, woman |
| Go il, bread | Po, drink |
| Mish, man | Chau, begone |
| Khà, eat | Uthi, get up |
| Shàya, come | God, horse |
| Beh, sit | Gau, bull |
| Jolà, speak | T'koq, girl |
| Gà, cow | Mekide, give me |
| Angyùr, finger | Rà, it, might |
| Mùlkanth, buying | Chuil, goat |
| | Birbùr, tiger |
| | Màs, meat |
| | No,il, cap |
| | Shàh, put on (imperative) |
| | Yàr, friend |
| | Jàr, fight |
| | Màr, kill |
| | Tàran, forehead |
| | Dùdh, lip |
| | Dà,ir, chin |
| | Khasha, cheek |
| | Thoho, hand |
| | Jang, calf of leg |
| | Gablt, anus |
| | Jolà, speech |
| | Pù, son |
| | Ghìn, take |
| | Dàs, day |
| | Roups, musk deer |
| | Shirmukh, hyena |

Yà, barley
Gujur, clothes
Shirbâl, trousers
Sî, sew
Ghâlim, enemy

Migar, joy
Achhi, eye
Nistûr, nose
Kan, ear
Dand, tooth

Shish, head
Kâor, foot
Erkas, breast
Us, strike
Ting, back

1 Yak

6 sho

11 ikâ

16 shohud

2 do

7 shat

12 biyâhâ

17 satâha

3 shâ

8 hasht

13 sheltâha

18 hastâha

4 chor

9 nob

14 chohâ

19 unbist

5 pânch

10 dash

15 panchi

20 bis

A VOCABULARY OF THE LANGUAGE OF THE MOGHAL AIMAKS.

Introduction.

The Moghals are one of the four Aimaks; they inhabit the country of *Baghrân* and *Mai igân*, the former is subject to *Candahar* the latter to *Herat*.

A story is told that one of the kings of *Persia* sent for a Moghal Aimak, to inquire the structure of his language, and was so disgusted with the discordancy of its sounds that he ordered the man to be killed.

While the executioners were preparing to strike off his head, the king, to give the culprit a last chance, inquired the Moghal for "face." The man answered "*nûr*" which in Persian signifies "light:" this lucky answer it is said saved the credit of the Moghal language and the head of its propounder or lecturer.

Vocabulary.

Odur, day
Soul, night
Nârân, warmth
Ghâr, hand
Koun, boy
Wokin, girl
Bâhâ, father
Turuksan, brother
Khâwâr, sister
Ussun, water
Ghâr, fire
Ukpang, bread
Shahar, city
Deh, village
Darakht, tree
Morin, horse
Morin, mare
Nakchir, deer
Eljigân, ass
Murgh, fowl
Teman, camel
Wataga, bear
Sunu, milk
Unda, butter-milk

Khin, iron
Bizâ, monkey
Chinâ, wolf
Nokai, dog
Buz, goat
Saghal, beard
Saghligh, sheep
Ukarr, a bull
Winâ, cow
Sughul, a calf
Bughdai, wheat
Arpa, barley
Ghurul, flour
Chighân, rice
Anâr, pomegranate
Angûr, grapes
Pyâz onion
Sir, leek
Zardak, carrot
Dapsuny, salt
Tosûn, clarified butter
Khâgina, egg
Tarakh, curds
Kagar, earth

Surab, lead
Brinj, brass
Tilla, gold
Nukhrâ, silver
Kul, food
Gesal, belly
Kabr, nose
Nuddun, eye
Kelân, tongue
Kala, chin
Undun, trousers
Kilghâsûn, wool
Nakâ, shoes
Girr, house
Kongân, light
Ulan, red
Kokâ, green
Shira, yellow
Burghâja, cooked
Ould, blind
Ukubâ, dead
Nira, name
Yamal, saddle
Oulâ, hill

Khisht, brick
Oda, above
Dunda, in
Indar, here
Javlà, before
Ghimsà, nail
Ekin, head
Chakin, ear
Nùr, face
Shuddun, tooth
Kela, speech
Kujunn, neck
Geeù, hair
Malghai, cap
Khàtun, woman
Kor, breeches tie
Sàmàn, grass

Chaghàn, white
Kàrà, black
Mor, road
Khàm, raw
Lang, lame
Ebat, pain
Chah, well
Kulba, plough
Ghajar, plain
Khirja, hut
Shewa, below
Ghadana, out
Tindar, there
Koinà, after
Khùb, good
Watar, quick
Bad, bad

Uchkodar, yesterday
Kùrì, stone
Kejà, when
Enakai, now
Hàn, yes
Yema, why
Be, I
Te, he
Inodar, to-day
Nuntar, asleep
Modun, wood
Khanà, where
Bas, enough
Ogai, no
La, not
Chi, thou
Ekada, many

1 nikka
2 koyar
3 ghorban
4 dorban

5 tábun
6 jolàn
7 jurghan,
&c. &c.

Verbs.

Ira, come
Ida, eat
Buz, rise
Barre, catch
Bi niwla, don't cry

Kp, take up
Umas, put on
Orchi, go
Son, sit
Hug, heat

Hàlà, kill
Guilya, run
Tali, put
Uannù, mount

Sentences.

Nàm chi yama bi
Kedù turuksan betar
Kaun indai ira
Bàzàr tù horchi sùn hàcharà bi-
dandà
Malghai non yemagaja lon masu-
ninchì
Kanaur chi nantar
Gà buz
Ghar mence ebatunna
Umur tamkedù sàl be
Indasa ta Cabùl kedùr mor be
Ordà màni koyàr rupe kocharpà
Katai màni nìraini Halim Jan be
Morini tàni kimatni kedù be
Indasa tà farrah morni kiraini kedù
be
Bàbà tàni àmdun be
Àmdun ogai be ena ghorbàn sal beki
okuja
Turuksan màni tani nantar
Chaghàn bulja saghal manì
Bidanasai yam guji kàshuda janta
Nazar tümì nìran ki modr barish
ikina
Agarchi kilàs ugai bechi turuksan
raiki

What is your name?
How many brothers have you?
Come here, boy.
Go to the bazar and bring me some
milk.
Why don't you wear a new cap?
Where are you going?
Rise early.
My hand pains me.
How old are you?
How far is Cabùl from this?
I have two rupees left.
Halim Jan is the name of my chief.
What is the price of your horse?
What is the hire of a horse from
this to Tarrah?
Is your father alive?
He is not alive, he died 3 years ago.
Do you know my brother?
Your beard has turned grey.
Why are you angry with me?
It looks as if it would rain to-day.
If you are employed send your bro-
ther.

Waka satàni gham into barina
Nikka odurton kedà mor orchì nanta
Morni yamal ke ki unusunna

Odur begà burja boz ki warchi ena

Bida ira labda khismat tortani enaka
rukhsat kltùnì ki warchya girtuna
Dundadà manì kudal beyagaga

Undùt dundàniji àwàza bila ka
Muhammad Shah ùkujanna
Eljiganin manì uchhàn sonì kulaghai
achichanna ; daisunni katkair yat-
trajanne nikka mehman bila tent
eljiganin kulaghai achichanna

How are you taxed in your country ?
How far can you go a day ?
Saddle the horse that I may take a
ride.

The day is far spent rise and let
us go.

I came to wait on you, now give me
leave to go home.

Let there be no deceit between you
and me.

There was a report in the camp
that Muhammad Shah was dead.

Yesternight a thief stole an ass of
mine by cutting his tether ; the
thief also stole an ass of a guest
of mine.

IV.—*Note on the New Zealand Caterpillar.* By G. EVANS, Esq.
Curator of the As. Soc. Museum.

After a careful scrutiny of the New Zealand caterpillar entrusted to my charge at a former meeting and on which I was requested to report as to the precise, or most probable nature of the remarkable and apparently anomalous connection existing between the animal and the vegetable fibril projecting from its head (an extraordinary feature in the economy of this curious insect that has led to the fanciful belief that we have here an unequivocal instance before us of animal and vegetable life linked together in one continuous existence) I am led to the following conclusions.

That the caterpillar, the subject of our speculations and present inquiry, is the larva of a lepidopterous insect, that contrary to the general law of its own order, it neither fabricates a cocoon, nor constructs any kind of defence to protect itself from injury for the time it has to continue in the aurelia or chrysalis state, but as some provision is doubtless necessary for its future preservation, to enable it to fulfil its destiny as intended by nature, it resorts to another expedient equally efficacious and tending to the same wise and beneficent ends, and this is by artfully suspending itself by the head from some part of the tree or plant on which it feeds, in which pendulous state it continues stationary and undergoes its natural metamorphosis.

The manner by which it contrives to attach itself to the slender tendril, (or vegetable fungus as some have considered it,) and which is truly pure vegetable matter, and a continuous part of the same tree it derives its support from, appears to be simple and easy of explanation,

and, if I am right in my solution of the mystery, it is effected in the following way.

A twig or tendril of the tree, or more probably a climbing plant, on which it subsists in the larva state, having been selected for its purpose, the caterpillar smooths off the end with its sharp mandibles and thus forms a clean and even surface to proceed upon. It then splits the bark and vegetable fibres for a short distance up the stem, separates the divided portions and insinuates its head between the intervals so formed, leaving the divided ends to close over and by their compressing force to retain the head in a fixed position, when by the aid of a kind of gluten plentifully supplied from all parts of the body, and apparently possessing the properties of caoutchouc, the two dissimilar bodies are firmly glued as it were into one; in this vertical posture I conclude the transformations from one stage to another pass on, till the imago or winged form is assumed. Beyond the idea of mechanical support on the one hand and self-preservation on the other inherent throughout all animated nature, it is difficult to assign to this curious appendage any other more suitable office, and what would seem to give some support for this conclusion is my having detected what has every appearance of being the divided and radiating fibres of the stem, extending over the head of the caterpillar as before explained, but the specimens are in such a dried and unfit state for an investigation of this nature, that I can only offer what I have here stated as a provisional exposition to be confirmed or invalidated by more competent persons, whose advantages may afford a fuller scope for their investigations: to suppose that animal and vegetable matter, each possessed as we know they are of different and distinct properties, (though both composed of the elements of common matter,) can ever become continuous and co-existent is irrational and contrary to the common laws of nature, for the changes and operations that take place within themselves separately and individually, are too widely diversified ever to admit of such a relation as the one here erroneously conceived.

Sept. 3rd, 1838.

Note.—EDWARDS, in his *Gleanings of Natural History*, a work published above 70 years ago, mentions an insect that was brought from *Dominica* and of many more found at the same place, having a fungus shooting from the head, but he gives no solution of the extraordinary phenomenon.

V.—*An examination of the Páli Buddhistical Annals, No. 3. By the Hon'ble GEORGE TURNOUR, Esq. Ceylon Civil Service.*

[Continued from page 701.]

Concerning the four BUDDHÁ of this kappo.

Extracts from the Aññakathá called the Madurattihawilásini on the Buddhawanso, which is the fourteenth book in the Khudakanikáyo of the Suttapiṭako.

The *Buddhawanso* purports to be the narrative of the history of the last twenty-four Buddha who have appeared during the last twelve regenerations of the world; and, as will be shown by the ensuing quotations, it was delivered by SÁKYA himself in the first year of his Buddhohood, for the purpose of convincing his royal kinsmen, that the mendicant life he was leading ought not to be regarded by them in the light of a degradation.

In this instance also, for the reasons explained, I give the preference to the *Aññakathá*. The following are the names of the twenty-four Buddhá exclusive of SÁKYA, and the age in which each appeared, of whom the text and the commentary treat.

In the 12th *kappo* from the present one, four Buddhá appeared, the last of whom was DÍPANKARO, the 1st of the twenty-four alluded to above.

In the 11th ditto; 2nd, KONDANNO.

In the 10th ditto; 3rd, MANGALO; 4th, SUMANO; 5th, REWATO; 6th, SOBHITO.

In the 9th ditto; 7th, ANOMADASSI; 8th, PADUMO; 9th, NÁRADO.

In the 8th ditto; 10th, PADUMUTTARO.

In the 7th ditto; 11th, SUMEDO; 12th, SUJATO.

In the 6th ditto; 13th, PIYADASSI; 14th, ATTHADASSI; 15th, DHAMMA^VDASSI.

In the 5th ditto; 16th, SÍDATTHO.

In the 4th ditto; 17th, TISSO; 18th, PHUSSO.

In the 3rd ditto; 19th, WÍPASSI.

In the last ditto; 20th, SIKHI; 21st, WESSABHU.

In the present ditto; 22nd, KAKUSANDHO; 23rd, KO'NÁGAMANO; 24th, KÁSSAPO; GÓTAMÓ, METTEYYO, who is yet to appear.

As however, this article is only designed to advert to events connected with the present creation, I shall commence with the history of the KAKUSANDHO, after giving a few of the introductory observations fur-

nished by BUDDHOGHOSO at the commencement of his commentary on the *Buddhawanso*. He thus expresses himself.

"By whom was this (*Buddhawanso*) propounded? Where, on whose or what account, and when was it delivered? Whose discourse is it, and how has it been perpetuated?

"In the first instance, concisely explaining all these points, I shall then enter upon a detailed commentary on the *Buddhawanso*.

"By whom was this *Buddhawanso* propounded? It was propounded by the supreme Buddha, who had acquired an infallible knowledge of all the *dhammā*, who was gifted with the ten powers, who had achieved the four *vasarajjāni*, was the *rāja* of *dhammā*, the lord of *dhammā*, the omniscient TATHA'GATO.

"Where did he propound it? He propounded it at the great city *Kapilawatthu* at the great *Negrodho vihāro*, in the act of perambulating on the *Ratanachankamo*, which attracted the gaze of *deva*s and of men by its pre-eminent and exquisite beauty.

"On whose account? He propounded it for the benefit of twenty-two thousand kinsmen, and of innumerable *kōṭiyo* of *deva*s and men.

"On what account? He propounded it that he might rescue them from the four *Oghā* (torrents of the passions).

"Where did he propound it? BHAGAWA, during the first twenty years of his Buddhohood led a houseless life (of a pilgrim), sojourning at such places as he found most convenient to dwell in; viz. out of regard for *Bārdāsī* he tarried the first year at the *Isipatana*, an edifice (in that city) near which no living creature could be deprived of life,—establishing the supremacy of his faith, and administering to eighteen *kōṭiyo* of brāhmins the heavenly draught (*nibbāna*). The second year, he dwelt at the *Weliwano mahā vihāro* in *Rājagaha* for the spiritual welfare of that city. The third and fourth years he continued at the same place. The fifth year, out of consideration for *Wesālī* he dwelt in the *Kudgāra* hall in the *Mahāvano vihāro* near that city. The sixth at the *Makulo* mountain. The seventh at *Tasatensa Bhawano* (one of the *Devaloka*). The eighth year, for the welfare of the *Samsumāra** mountain near *Bhuggo*, he dwelt in the wilderness of *Bhāṣakala*. The ninth year, at *Kosambā*. The tenth year, in the *Paraleyyako* wilderness. The eleventh year, in the brahman village *Nālā*. The twelfth at *Weranja*. The thirteenth at the *Chālī* mountain. The fourteenth at the *Jētawano Mahā vihāro* in *Sāvatthipura*. The fifteenth at the great city *Kapilawatthu*. The sixteenth at *Alawī* subduing *Alawako* (an evil spirit); and administering the heavenly draught to eighty-four thousand living creatures. The seventeenth at *Rājagaha*. The eighteenth at the *Chālī* mountain. The nineteenth at the same place, and he resided the twentieth at *Rājagaha*. From that period he exclusively dwelt either at the *Jētawano mahā vihāro* for the spiritual welfare of *Sāvatthipura*, or at *Pubbārāma* for the welfare of *Sāketipura*, deriving his subsistence† by alms (from those cities).

* *Samsumāra* is synonymous with *Kapilo*, in Singhalese *Kimbulwatpura*, the birth-place of GOTOMO BUDDHO.

† In those days, Buddhistical religious institutions possessed no endowments, and the priesthood entirely subsisted on alms. It is stated to be mentioned elsewhere, though the passage has not been shown to me yet, that the period of SA'KYA's sojourn at *Sāvatthipura* was nine, and at *Sāketipura* sixteen years. By residence however, at any place is not to be understood an uninterrupted residence of the whole year. The year is divided into the *hémanto* (snowy or cold), *gembhāno* (hot) and *wasanno* (rainy). During the two former the Buddhist priesthood were required to devote themselves exclusively to a life of pilgrimage, and in the last, to have a fixed abode

"On SATTĀ (the divine teacher SAKYA) becoming Buddho, he held his first *wasso* at the *Isipatana* an edifice situated at *Bérāsasi* at a place so secluded that no wild animal was disturbed; and having completed his *wasso* there, repaired to *Urmudā* where he tarried three months. Having there converted the three *Jatilians* who were brothers, attended by his fraternity of a thousand bhikkhus, he proceeded to *Rājagaha*, on the full moon day of the month of *Maga**, (January-February;) and there sojourned two months. Five months had then elapsed, since his departure from *Bérāsasi*. The *hémanto* was also over; and it was also seven or eight days after the arrival of the emissary† UDA'YI. That individual in the month of *Phaggaso*, (February-March,) thus thought 'the *hémanto* is past, and the *wasanto* (first half of the hot season) is arrived; and it is the time TATHAGATO promised to repair to *Kapilawattihū*.' Having thus reflected, he set forth the gratifications of a visit to his native city in a poem of sixty verses (to BUDDHO).

"Thereupon SATTĀ, on his hearing this appeal, disposed to gratify the wishes of his relatives, attended by ten thousand (*bhikkhus*) of various tribes, from *Anga* and *Magadha*, and by ten thousand from *Kapilawattihū*, being altogether twenty thousand sanctified *arabants*, set out from *Rājagaha*. By only travelling daily at the rate of one *yojana*‡, he reached the city of *Kapilawattihū*, which is distant from *Rājagaha* sixty *yojanā*, in two months: and in order that he might command the reverence of his relations, he performed a miracle of two opposite results. It was upon this occasion, that he propounded the *Buddhavaṃso*.

"Whose discourse is it? It is the discourse of the Supreme Buddho, who is not to be compared with the priesthood, and the *Pachchi Buddhā*.

"By whom has it been perpetuated? It has been perpetuated by the generation, or unbroken succession, of the *Thérā* (elders of the priesthood). This is that succession: SARIPUTTO théro, BHADDASI, TISSOKOSYAPUTTO, SIGGAWO, MOGGALIPUTTO§, SUDATTO, DHAMMIKO, DARAKO, SONAKO, REWATO. By these it was brought to the period when the third convocation was held.

"If it be asked, how has it subsequently (to the third convocation) been perpetuated by their disciples? Be it understood, that in the same manner, it has been brought down to the present day, by the transmission from preceptor to disciple.

"By thus much explanation alone, it will be understood, by whom, where, for whose edification, on whose account, and when it was propounded; whose discourse it was, and by whom it has been perpetuated. It now behoves unto the expounder of this commentary, to enter upon his general explanation (of his work).

"This *Aṭṭhavaṃsanā* is the (*nidāna*) repository of the history in part of a remote antiquity; in part of comparatively modern, and in part of contemporaneous

charging themselves with certain stationary religious duties. Though the Buddhist priests have lost in *Ceylon* much of their mendicant character, from the age in which their temples became endowed with lands, the observance of *wasso* is so far preserved still, that every priest of any repute is in general invited by some wealthy individual, or by a community, to take up his residence at some selected place for the *wasso*, where he is provided with an habitation and his subsistence, and is treated with great respect.

* The text gives *Russamaso* (December-January), which is considered to be a clerical error.

† An emissary from *Kapilawattihū* sent by SUDDHODANO, the father of BUDDHO, to entreat of him to be respectably maintained by his family, instead of leading the life of a religious mendicant.

‡ About 16 miles.

§ Not MOGGALIPUTTATISSO by whom the third convocation was regulated.

events. The illustration of these three portions of the history, in a manner to be readily comprehended, would be an important work. Those who attend thereto and acquire a knowledge thereof from the commencement would lay up a store of valuable knowledge. I shall therefore enter upon the exposition of these *nidānāni*, rendering (their imports) manifest. Therein (in the study of this exposition) due notice should be taken of the division of the three *nidānāni*.

"The nature (of the three *nidānāni*) may be thus briefly explained: the history extending from the age in which the sacred assurance was vouchsafed to the *Mahāsatto** at the feet of DI'PANKARO Buddho†, until by his death in the character of WESSANTARO, he was regenerated in the *Tāvatinso dēvalōko*, is called the *Durē-nidānān* or the history of remote antiquity. The history extending from the translation by death from *Tāvatinso* to the attainment of omniscience at the foot of the *Bodhi*, is called the *avidurē-nidānān* or comparatively modern history. The contemporaneous history contains records such as this, 'at such a period BHAGAWA' dwells at *Sāvattthi*, at the *Jétavanno* viháro, an edifice belonging to ANATHO, a dispenser of charity: 'he dwells at *Rājagāham* at the *Wétuvanno* viháro (the viháro in a bamboo grove) at which the squirrels are regularly fed,' 'he dwells at *Wetthi* in the *Kūṭṭigāra* hall in the great wilderness.' In this manner whatever intervenes from the attainment of omniscience at the foot of the *Bodhi* tree, until his deathbed (scene) in obtaining *mahā parinibbāna*, whatever takes place in the interval, he it understood that wherever he may have tarried, is included under the *saṅtikē-nidānān*, resident or contemporaneous history. In these few words an explanation exclusively of three *nidānāni*, viz. *durē*, *avidurē* and *saṅtikē* has been afforded."

I now proceed to quote from the *Aṭṭhakathā* on the *Dwēwisati-buddhawanso* or the genealogy of the twenty-second *Buddhā*.

"From the *kappo* in which the *Syambhu*, WESSABHU, attained *parinibbāna* during twenty-nine *kappē*, no luminaries like suns, the vanquishers of darkness, appeared. In this present *Bhadda kappo*‡ four *Buddhā* have already appeared; viz. KAKUSANDHO, KONA'GAMO, KASSAPO and our own Buddho (GO'TAMO). The *Bhagawē Metteyyo* will be born hereafter. As this *kappo* is destined to comprize the manifestation of five *Buddhā*, it has been designated a *Buddha kappo* by BHAGAWA'.

"Of these, KAKUSANDHO having fulfilled his probationary destinies, and been regenerated in the *Tusitapura* (*Dhōdāloko*), after death there, he was conceived in the womb of WISAKHA the principal wife of AGGIDATTO, the *Prohito* brahman, who was the instructor in the tenets and doctrines of his faith, of the raja KHE'MO in the *Khēmanagara*.

"Whenever rājas uphold, reverence, make offerings and render homages to, the brahmans, the *Bodhisattā*§ are born in the brahman tribe; and whenever the brahmans uphold, reverence, make offerings and render homage to the rājas, then they are born in the rāja tribe.

"At this period the brahmans were receiving the services and homage of the rājas, and on that account the illustrious personage, who was the true KAKUSANDHO was manifested in a pure brahman tribe, endowed with prosperity and greatness, causing the hundred *Chakkavalāni*, of which the perishable universe is composed,

* The name of Buddho prior to his attaining Buddhohood, literally "the great mortal."

† Vide *Mahavanso*, p. XXXII.

‡ Supreme *Buddha*.

§ From the root *Bhaddi* excellence.

|| Individuals destined to be supreme *Buddha*.

to glorify him, and to quake (with joy) ; and, in the manner before described, miracles were performed.

" At the termination of ten months, he issued from his mother's womb, like a flame of fire from a golden furnace, and lived the life of a layman, maintaining domestic relations for four thousand years. He had three palaces called *Rucm*, *Surucm* and *Wadhucm* ; and an establishment of thirty thousand females, of whom the brahman *Róchiní* was his principal consort.

" Having (already) been visited with the four prescribed warnings, at the birth of his illustrious son *UTTARO* by the brahman *Róchiní*, he took his final departure, in his state car drawn by six high bred horses, and entered into the priesthood :—in pursuance of whose example forty thousand persons also entered into the priesthood.

" Attended by them, having for eight months undergone the probationary ordeals, on the full moon day of the month of *Wésako*, having partaken of the sweet rice boiled in milk for him by the daughter of the brahman *WAJARUDO*, in the brahman village *Sucharindo* ; and having taken his noon rest in the *Khadira* wilderness, in the afternoon, accepting from one *SUMHADDHO*, a corn-grower, eight handfuls of grass, and approaching the *Síriss* (the *síriss acacia*) his sacred tree, which was exhaling a heavenly fragrance similar to that of the *pálali* before described, and spreading out a sward carpet thirty-four cubits in breadth, seating himself on that throne he achieved supreme Buddhohood.

" Having chaunted forth the *uddaman* (hymn of joy) and passed there seven times seven days, satisfying himself that the forty thousand bhikkhus who had been ordained with himself were qualified to comprehend the *sachapaññodáde* (the four sublime truths of Buddhism), he repaired in a single day to *Isipatthan*, an edifice near which no living creature could be deprived of life, situated in the neighbourhood of *Makhilengara* (*Benares*), and in the midst of those disciples he proclaimed the supremacy of his faith."

After detailing some further particulars of the early acts of *KAKUSANDHO* the commentary proceeds thus :

" At that period our *Bódhisatto* (*SAKYA*) existed in the person of the (reigning) monarch named *KHEMO* ; and presented alms, dishes, robes and (other) established alms-offerings to the priesthood of whom the Buddha (*KAKUSANDHO*) was the chief ; and provided sandal-wood and medical drugs, bestowing also sacerdotal gifts. Attending to his doctrinal discourses he became a convert (to Buddhism) and was ordained a priest in the fraternity of that Bhagawa. The divine teacher (*KAKUSANDHO*) predicted to him that he would hereafter, within this *kappo*, himself become a Buddha.

" The native city of this enlightened *KAKUSANDHO* Bhagawa was *Khemana-garava* : his father was the brahman *AGGIDATTO* and his mother the bráhman *WISAKHA*. His chief disciples were *WIDHURO* and *SANJINO* : his *Upattháyo* (assistant disciple) was *BUDDHIYO* ; his two chief priestesses were *SAINA* and *CHAMPACHA* ; his sacred tree the *Mahastíriss* : his stature forty cubits, the effulgence of his glory extended ten *yójan*s around ; the term of his existence was forty thousand years ; his consort (while he was a layman) was the brahman *ROCHINÍ* ; his son *UTTARO*, and he departed (on severing himself from lay connections), in his car drawn by horses of the *ajanna* breed."

Then follows a metrical repetition of the foregoing particulars quoted from the *Buddhawansa* itself, and other details connected with *KAKUSANDHO* to the end of that chapter, which it is unnecessary to adduce in this place.

The genealogy of the twenty-third Buddha.

" Subsequent to KAKUSANDHO Bhagawá and to the extinction of his religion, when the term of human existence extended to thirty thousand years, the divine sage KONA'GAMANO, whose heart was always benevolently inclined to others, was manifested.

" It might appear from this statement that the term of human existence was gradually curtailed; but such was not the case. Be it understood, that it had been curtailed, and having been augmented was again reduced. For example in this lapse the Bhagawá KAKUSANDHO was born, whose allotted term of existence was forty thousand years. That term of existence gradually decreasing was reduced to a term of ten years; and subsequently increasing again to an *Asankheyyan*, and from that point again diminishing, had arrived at the term of thirty thousand years. Be it understood, that it was at that conjuncture that the Bhagawá KO'NA'GAMANO was born. That personage having fulfilled his probationary courses, and been regenerated in the *Tusitapura Dévaloko*, and having demised there, was conceived in the womb of UTTARA', a lovely and youthful brahmani, the consort of the brahman ANNADATTO of the city *Sóbhawatte*; and at the termination of ten months issued forth from the womb of his mother, in the *Sóbhawatte* pleasure garden.

" At the instant of his birth, throughout *Jambudípa*, a golden shower (*tanakmassa*) descended; and from that circumstance he acquired the appellation of KANA-KA'GAMANO, which name of his, by process of change, became KO'NA'GAMANO.

" He lived in the domestic relations of a layman for three thousand years, and he had three palaces, *Tusitá*, *Santasitá* and *Santuttho*, and sixteen thousand women, of whom the brahman RUCHIGANTHA' was his principal consort. Having been visited by the four prescribed warnings, on the birth of his son SATTAWA'HO by RUCHIGANTHA', mounting his superb state elephant, and taking his final departure (from wordly grandeur) he entered into priesthood; and his thirty thousand followers following his example, also entered into the sacerdotal order.

" Having for four months (singly) undergone the probationary ordeals, and having on the full moon day of the month of *wesako*, partaken of the rice sweetened by being boiled in milk, which was offered to him by the daughter of the brahman AGGISA'NO, and enjoyed his noonday rest on the *Khadira* forest, in the afternoon, accepting the eight bundles of grass which were presented to him by TINDUKO, a cultivator,—approaching (unattended) from the southward his sacred tree, the *udumbaro*, (*Ficus glomerata*)—which was adorned with fruit as described in the instance of the *pundarika* tree,—and spreading out a sward carpet twenty cubits in breadth, seated on that throne, he annihilated the power of death, by attaining the wisdom of the ten powers (Buddhohood) and he chaunted forth the *Udanas*.

" Passing there seven times seven days, and having by his inspiration seen the proficiency of the thirty thousand bhikkhus who were ordained at the same time as himself,—rising aloft into the air he descended at the *Isipatana* near the city *Sudassanó*.*

" Alighting in the midst of them, he proclaimed the supremacy of his faith; and on that occasion he procured for a thousand *kótiyo* of living beings the first stage of sanctification. Subsequently performing a miracle, productive of two conflicting results, at the foot of the great *sálo* tree, at the gate of *Sundaranagara* he administered dhammo, the draught of heaven, to twenty thousand *kótiyo* of living beings; and procured for them the second stage of sanctification; and on the occasion of this Bhagawá expounding the *Abhidhammopitako* to his mother UTTARA' and the *déwata* of the hundred thousand *Chakkawalaní*, who had assembled for that purpose, ten thousand *kótiyo* of living beings attained the third stage of sanctification."

* The name of Benares at that time.

Here again the above particulars are repeated, being quotation, from the text of the *Buddhawanso*. This quotation is also in verse, but is less detailed, though substantially the same as the preceding. The commentary then proceeds, as in the instance of the Buddho KAKUSANDHO, first to give in prose the remaining particulars connected with the Buddhohood of KÓNA'GAMANO, and then to quote the passages from the text of the *Buddhawanso* as propounded by SÁKYA. I avail myself in this instance of a short quotation from the text of the *Buddhawanso* as the revelation it contains is both concise and comprehensive.

"I was at that period the monarch PABBATO, powerful by my allies and ministers, as well as by my numerous armies. Having waited upon Buddho, (KÓNA'GAMANO) and attended to his supreme *dhammo*, and after obtaining the permission of that vanquisher and his priesthood, having presented them every offering wished for, for refreshment, I presented also the shawls with rough surfaces, China silks, shawls made of the silk of silk-worms, blankets, and slippers embroidered with gold, to the divine sage and his disciples. The said MUNI seated in the midst of his priesthood thus predicted of me. 'Within this *Bhaddakappo* this individual will become *Buddho*.' "

Here the commentator, BUDDHAGHÓSO, notes that he has omitted some portions of the revelations which were probably not strictly applicable to the subject under illustration, and resumes SÁKYA's discourse as follows :

"On hearing this prediction of his (KÓNA'GAMANO's) I (SÁKYA) exceedingly rejoiced, instantly resolved to fulfil, thereafter, the ten probationary courses. Seeking, therefore, the gift of omniscience, presenting alms to the chief of men (KÓNA'GAMANO) I entered into priesthood in the fraternity of that vanquisher, abdicating my empire."

After again omitting an interesting portion of the revelation, not connected with the subject under consideration, the commentary proceeds as follows with the quotation from the text of the *Buddhawanso*.

"*Sobhito* was his city—and SÓBHÓ the name of the ruling monarch : that Buddho's father's family dwelt in that city. The father of that Buddho, the divine sage KÓNA'GAMANO was the brahman YONNADATTO, and his mother UTTARA'. His chief disciples were BÍHÓSO and UTTARO; and his assistant disciple SOTTHIJO; his chief priestesses SAMUDDA and UTTARA', and the sacred tree of that Bhagawá was the *udumbaro*. In his stature, the Buddho was thirty cubits, and he was invested with a golden glory like the flames issuing from a blacksmith's forge. The term of existence of the Buddho was thirty thousand years. During that period, he rescued great multitudes (from the misery of transmigration). Having established *dhammo*, as (firmly as) a *chetiyo* which is decorated with the embellishments of *dhammo*, and with garlands of the flowers of *dhammo*—he, together with his disciples, attained *nibbāna*. His miraculous essence, as well as his disciples, and his promulgated *dhammo*, all vanished in as much as all that is transitory is perishable."

The genealogy of the twenty-fourth Buddho KASSAPO.

"Subsequent to KÓNA'GAMANO, the Buddho KASSAPO, the chief of bipeds the *rāja* of *dhammo* and the author of light—having bestowed largely in alms, and having conferred charity extensively and consoled the destitute, relinquishing (the

worldly riches which were) the rewards of his piety, and (escaping from his domestic ties) like unto a bull rushing from the restraints of his pen, achieved supreme Buddhohood ; and this chief of the universe, KASSAPO, proclaiming his faith, vouchsafed to twenty thousand *kétīyo* of living creatures, the first stage of sanctification."

After a few explanatory remarks on the foregoing passage, the commentator again quotes from the text, setting forth the pilgrimages and discourses of KASSAPO, by means of which he acquired, as his predecessors had done, the three states of sanctification for the living creatures then in existence. The commentary then gives the following extract from the *Buddhawanso*.

"I (SA'KYA) at that period, was one JOTIPA'LO, excelling in the *mantra*, and perfect master of the three *veḍḍā*, which I used to rehearse by *notz*. I had achieved the knowledge of signs of the *utthāso* and of divination. I could reveal what was in the earth below, and the heavens above, and was in the exercise of these powers, free from all corporeal ailments. KASSAPO Bhagawā had then a certain assistant disciple named GHATIKA'RO who was treated with great honor, possessed a well regulated mind, and had subdued the dominion of sin, by the virtue of the third state of sanctification. The said GHATIKA'RO conducted me to the vanquisher KASSAPO, and having listened to his *dhammo*, I entered into the order of priesthood in his fraternity. Pursuing (my sacred calling) with zealous devotion, and performing all my religious obligations without the slightest omission, I fulfilled the ordinances of the vanquisher ; and having thoroughly acquired a knowledge of the whole scope of the Buddhistical doctrines composing the nine *sangā*, as propounded by the vanquisher, I glorified that dispensation of the vanquisher. That Buddha also having witnessed my miraculous attainments thus predicted. This individual will become a Buddha in this *Buddhakappa*. On hearing this prediction, astonished and delighted, I at once formed the resolution to fulfil thenceforth the four probationary courses ; and consequently I led the life of a pilgrim, renouncing all domestic affections, and in exclusive devotion to the attainment of my Buddhohood, I consigned myself to that arduous task."

The commentary then affords the following particulars regarding the personal history of KASSAPO.

"The native city of that Buddha was called *Bārānasi*, and the reigning monarch was KIKI', and KASSAPO's family was resident there. His father was the brahman BRAHMADATTO, and his mother DEANAWATI: his chief disciples were TISSO and BEA'RA'DDWAJO ; his assistant disciple SUBBHAMITTO ; his chief female disciples were AMILA' and URUWE'LA', and the sacred tree of that Bhagawā was the *nigrodho*. In his stature he was twenty cubits, dazzling like the lightning in the skies, and refulgent as the full moon ; and the term of his existence was twenty thousand years. He who had existed the whole of that period, redeeming multitudes of living creatures (from the misery of eternal transmigration), rendering *dhammo* refreshing as a pool, and *sīla* like unto fragrant ointment, investing (living creatures) with *dhammo* as it were their vestments ; sprinkling *dhammo* as it were the flowers of a garland, and placing *dhammo* before those individuals, who were about to attain the beatitude of *nibbāna* as it were a mirror, he vouchsafed to say, behold the perfection (of my dispensation). And converting *sīla* into a cloak and *jñāna* into a breastplate, he covered (mankind) with the armour of *dhammo*, and provided them with the most perfect panoply. Bestowing on them *sāle* as a shield, and *sikkhāna* as a sceptre, he conferred *dhammo* on them as the sword that vanquishes all that is incompatible with *sīla*, investing them with *tēvija* as an ornament, and

the four *phala* as a tiara. He also bestowed on them the six *abhinā* as a decoration such as flowers to be worn; assigning the supreme *dharm* to them as the white canopy of dominion which subdues the sins (of heresy); and procuring for them the consolation (of redemption from transmigration) which resembles a full-blown flower, he and his disciples attained *nibbāna*. As well this incomparable Buddha who had overcome the dominion of sin, as his perfectly propounded dispensation, worthy of the invitation 'come hither and examine it,' and his priesthood, illustrious and strictly observant of sacerdotal discipline, the whole perished. If it be asked, why? 'Because all transitory things are doomed to perish.'

"The Bhagawā KASSAPO expired in the *Kāsi* country in the *Sétavyāna* garden in *Sétavyānagara*. His corporeal relics did not separate (his bones remaining jointed after the cremation). The whole of the population of *Jambudīpa* assembled and constructed a *thūpa* one *Yōjana* in height, each brick for its outer work was of gold, worth a *kōti* and set with jewels; and they filled in the inner part with bricks each worth half a *kōti*; its cement was composed of red lead, using the oil of the *śāla* seed, in the place of water.

"The said Bhagawā KASSAPO, fulfilling the object of his mission for the welfare of mankind, was a sojourner (chiefly) in the city *Migadāya* (a part of *Bārānasi*) in the kingdom of *Kāsi* rejoicing the universe.

"The rest of the *Gāthāyo* are well known in all their bearings. The account of the genealogy of the Buddha KASSAPO is thus closed in the *Atthakapa* called the *Mahāvastuśālistāni*, to the *Buddhavaṃso*. In this extent of detail; the history of the genealogy of the twenty-four Buddha is comprehensively concluded. Now in due course the history of the genealogy of our Buddha presents itself (for relation). This is his history.

"Our BODHISATTO (Buddha elect) existed through four *Asankheyyāni* and one hundred thousand *kappē*. His advent has been recognized and predicted by the (last) twenty-four Buddha, commencing with *Dr'pankaro* of whose fraternity he was a member. It has been thus announced by the revelation of those twenty-four Buddha 'there will be no other supreme Buddha subsequent to KASSAPO, than this individual.'

"These are the particulars (of his history). It has been thus explained by Buddha himself: 'the (*abhinētra*) final sanction (for attaining Buddhahood) is only obtained while in the collective possession of these eight attributes, viz. being of the human nature; possessing perfect manhood and a propitious destiny; being gifted with the privilege to approach a Buddha; being admitted into sacerdotal ordination; being endowed with pious impulses; being full of holy aspirations and zealously devoted to his destiny.' By him who had by the accumulated possession of these eight attributes, obtained the final sanction of *Dr'pankaro* to attain Buddhahood—it has also been said 'while I was acquiring by all manner of means the qualifications for Buddhahood, having succeeded in my search, I came in sight of the first *dānapārami* sanctification.'

"He who had been thus blessed with a sight of the first of the (ten) *dānapārami* which lead to Buddhahood, continuing to fulfil his prescribed duties, reached at length his *avata*r in the person *Wessantara* (his last existence before attaining Buddhahood). Whatever those duties might be, they have been described in speaking of the rewards of piety earned by the (other) Buddha elect, who had ensured their election.

"(Buddha has also said) 'Thus individuals of perfect manhood who have been selected to become Buddha perform their pilgrimage through a hundred *kōtiyo* of *kappē*, a long period: they are not subject to be born in the *Avichi* hell, nor in the *Ukātāra* hells, nor do they become inhabitants of the *Nigghāmatānā* hell, suffering from thirst and hunger—nor, tenants of the *Kālakanjanā* hell. Though they may be

reproduced in *Duggati* (a minor hell) in which men are reproduced in the form of animals, they are not born there a diminutive creature (smaller than a snipe); nor when produced among the human race, are they ever born blind, nor do they lose their hearing or become dumb. These selected Buddhas moreover are neither produced in the form of women, of ordinary hermaphrodites, or of hermaphrodites who periodically alternate their sex. Exempt from all misfortunes they are pure in their mode of subsistence—avoid heretics and are observant of pious conduct: though they may be born among the *Svaggá*, they are never reproduced in the *Brahmalóko asanasatto* (as the term of existence there would be too long); and they do not possess the qualification (of the arahat sanctification) which would involve their reproduction in the *Suddhāvāsa brahmalóko* (from whence they would never return to the human world). These righteous individuals, forsaking all worldly advantages, and released from the bonds of eternity, perform their pilgrimage for the welfare of the world, fulfilling their probationary courses.'

"He who was thus proceeding in the prescribed course of his destiny, having attained these (eighteen) attributes, and having thus reached his penultimate *avastā* in the person of WESSANTARO (the rāja of *Jetutaranagara* one of the twenty-five great cities of *Jambudīpa*) thus spoke. 'This earth devoid of the power of discrimination and unconscious of its blessings and its curses, has been made to quake seven times by the merit of my charities.'

"Having thus performed those great acts of charity which caused the earth to quake at the close of his prescribed term of existence, from hence he was translated, by death, into the realms of *Tusitapūra*. While the Buddha elect was sojourning in *Tusitapūra* the *haldhālan* (tumult) that precedes the advent of every Buddha came to pass.

"In each creation there are three such tumults—they are these: the *Kappa-haldhālan*, the *Buddha-haldhālan* and the *Chakkawatti-haldhālan*. It is a proclamation, that at the termination of one hundred thousand years, the *kappa* perishes. The dévī called *Kāmaravacharā*, with loosened topknot, and dishevelled hair, and with bewailing countenances—wiping their tears with their hands—clad in red vestments, and assuming the most revolting forms, wandering through the human world, thus promulgate their warnings: 'Blessed! at the termination of one hundred thousand years from this date, the *kappa* is to perish: this world will then be destroyed: the great ocean will be completely dried up. This great earth and *sirāsa* (sumēra), the monarch of mountains, will be consumed by fire and utterly destroyed; and the world will be annihilated as far as the *brahmalóko*: blessed! imbue thyself with benevolence: blessed! impress thyself with compassion, universal love and strict justice; comfort thy father and mother, and reverence the elders of your tribes.' This is called the *kappa-haldhālan*.

"Again it is proclaimed that at the termination of one thousand years an omniscient Buddha will be born in the world. The *Dēvatā* who protect the world, wander through it, proclaiming, 'blessed! Buddha will be manifested in the world a thousand years from this period.' This is called the *Buddha-haldhālan*.

"Lastly it is proclaimed that, at the termination of a hundred years, a *Chakkawattī* rāja will be born. The *Dēvatā*, who are the tutelars of the world, wander through it proclaiming 'blessed! at the termination of a hundred years a *Chakkawattī* rāja will be born.' This is called the *Chakkawattī-haldhālan*.

"Among these, when the proclamation of the *Buddha-haldhālan* is heard, all the *Dēvatā* of the ten thousand *Chakkavalane* assemble at one place, and having ascertained who the human being is who will become Buddha—repairing to him they invoke him. These invokers, however, only address their petition to him on his manifesting the *pubbamittā* (indications of approaching death in the *Dēvatā*).

"At the conjuncture (in question), the aforesaid assemblage, consisting of the four great kings (of the *devas*) SAKKO (INDRA) SUGA'MO, SANTUSITO and WASAWATTI, together with the great *brāhmas* in each *Chakkawālan*, assembled together in one *Chakkawālan* (of the ten thousand); and repairing to the Buddho elect on whom the *pubbamittā* had been manifested; thus addressed him. 'Blessed! by thee, the ten probationary courses have been fulfilled, not for the purpose of realising the beatitude of a *sakko*, a *brāhma* or other deity: the state of omniscience has been sought for by thee, for the purpose of redeeming the world, by attaining Buddhohood.' They then thus invoked him: '*Mahāvīro*! thy time is arrived; be conceived in the womb of thy mother. Rescuing *déwā* and mankind (from the miseries of sin) vouchsafe (to them) the condition of immortality.'

"Thereupon the great elect, who was thus entreated by the *déwā*, without giving any indication of his having acceded to the prayer of the *déwā*—reflected successively on these five principal points; viz. as to the time (of his advent); the quarter of the world; the country and the tribe in which he should appear; and who his mother, and what the term of his existence should be.

"On examining, in the first place, whether it is or is not the proper time (for the advent of a Buddho) if it be found, that the term of human existence is then a hundred thousand years and upwards, it is not a proper period; because under so protracted an existence, the human race have no adequate perceptions of birth, decay or death. The tenets of the dispensation of (all) the Buddhā are inseparable from the recognition of those three points, characteristic of the Buddhist faith. To those (Buddha) who may expiate on those points, viz. perishability, misery (of transmigration) and *anattā*—those (who are gifted with this longevity) would reply; 'what is it they are talking about: it should neither be listened to nor believed.' The state of sanctification (*abhisamayo*) is, under those circumstances, unattainable. While that condition (of longevity) prevails, religion itself is divested of its sanctifying influence. Consequently that age is not a proper one (for an advent). Nor is the age in which the term of human existence is less than one hundred years a proper one; because from vices being then predominant among mankind, the admonition that is imparted to them is not allowed time to produce a lasting effect—vanishing like the streak drawn on the surface of the water. That also is not a proper age (for the advent). The proper age is that in which the term of human existence is less than one hundred thousand and more than one hundred. At the particular period now in question, the term of human existence was one hundred years; and therefore it appeared to be the proper age in which the advent of the elect should take place.

"Then he reflected as to the quarter of the world, contemplating the four quarters together with their satellites groups; and as in three of them the Buddhā do not manifest themselves, he saw that *Jambudīpa* was the quarter in which he should be born. And on reflecting as to the country in that great *Jambudīpa*, which is in extent ten thousand *yōjana*, in which Buddhā are born, he saw that the *Majjhima-dēsa* was the proper one, and he also distinctly foresaw, that there, in *Majjhima-dēsa* *Kapilavasthā* was the city which was destined to be the place of his birth.

"Thereupon, on pondering on the tribe, he found that the Buddhā are not born in the *Wessā* or *Suddā* caste, but either in the *Khattiya* or *Brahmā* caste, whichever might at the time be predominant in the world; and he said, 'now the *Khattiya* is the superior. I shall be born therein, and the *rajā* SUDDHODANO will be my father.' And then on considering as to who his mother should be, he said 'She who is destined to be the mother of a Buddho is chaste and sober, and has fulfilled her probationary career through a hundred thousand *kappā*, and preserved uninterruptedly, from her birth, the observance of the five *sīlāni*; such appears to be the

princess MA'YA': she is destined to be my mother.' And on inquiring how long she had yet to live, he found that was only ten months and seven days.

" Having thus meditated on the five principal points, he signified his acquiescence in the prayer of the *dévatā* in those words. 'Blessed! the time has arrived for my assuming Buddhohood;' adding 'do ye depart,' he sent away those *dévatā*; and attended by the *dévatā* of *Tusitapura*, he entered the *Nandana* grove in *Tusitapura*.

" In all the *Dévalōka*, there is, most certainly, a *Nandana* grove (in each) wherein *dévatā* hover about, thus invoking (such of the *dévatā* as are about to die): 'by meditating on the reward of thy former acts of piety, when translated from hence by death, may ye attain a happy destiny.' He (the Buddha elect) in like manner surrounded by the *dévatā* who were calling his former acts of piety to his recollection, while wandering there, expired; and was conceived in the womb of the great MA'YA', under the asterism of *Uttarasālā*. At the instant of this great personage being conceived in the womb of his mother, the whole of the ten thousand *Chakka-walōka* simultaneously quaked, and thirty-two miraculous indications were manifested. For the protection as well of the Buddha elect, who had been thus conceived, as of his mother, four *dévatās* with sword in hand, mounted guard.

" Unto the mother of the elect carnal passion was extinguished: she became exalted by the gift vouchsafed to her. Enjoying the most perfect health, and free from fainting fits, (usual in pregnancy) she was endowed with the power of seeing the elect in her womb, as it were a thread which is past through a transparent gem.

" A womb in which a Buddha elect has reposed is as the sanctuary (in which the relic is enshrined) in a *chetiya*. No human being can again occupy it, or use it. On that account the mother of a Buddha elect, dying on the seventh day after the birth of the elect, is regenerated in *Tusitapura*. Other women give birth to their offspring, some before the completion of ten months, and some after their completion, seated or lying down. With the mother of a Buddha elect, it is not so. She is delivered, after having cherished the elect in her womb for precisely ten months. Such is the peculiarity of the mother of a Buddha elect.

" The great princess MA'YA' having cherished the elect ten months in her womb, in her pregnant state, longing to repair to the city of her own family, thus applied to the *rāja* SUDDHODANO' (her husband) 'Lord! I long to repair to the city of *Dévalahó*.' The *rāja* signifying his consent by saying 'sádhu,' and ordering the road to be smoothened from *Kapilapura* to *Dévalahanagarān*, and to be decorated with arches of plantain trees and areca flowers, and with foot cloths, &c.; and placing the queen in a newly gilt palanquin, with great splendour and prestige, dispatched her.

" Between those two cities there is a hall of recreation situated in the *Sābhā* wilderness, resorted to by the inhabitants of both cities. At this time, the whole of the forest trees, from the stem to the top of the branches, were covered with blossom. On beholding this blooming forest, resembling the *Nandana* grove of the *dévatā*, ringing with the melody of the sweet-toned *Kōkila*, which enchant the senses, from amidst the branches and clustering fruit of the forest, like unto the chants of the celestial songstresses, the queen became desirous of desporting in that wilderness. The officers of state having reported (this wish) to the *rāja*, (by his command) escorting the queen, they entered the wilderness. She, repairing to the foot of the *sal* tree, at which sports are usually held, was seized with the desire to lay hold of a branch of that tree, which was straight, smooth, round, and garnished with blossom, fruit and young sprouts. That branch, as if powerless, yet gifted with compassion, bending down of its own accord, placed itself near the palm of her hand. She then laid hold of that branch with her beauteous hand, which was re-

splendid with her red well rounded nails, on fingers rosy and round like flower pods, her arms at the same time glittering with newly burnished arm-rings. Thus holding that branch, and pausing awhile, she shone forth, casting a halo round her like that emitted by white fleecy clouds passing over the disk of the moon. She resembled the glimmering lightning, she looked the queen of the celestial *Nandana*. Immediately her travails came on; and the multitude having drawn a curtain round her, retired. While still holding the branch, parturition took place.

"At that instant the four great *Brahmánas* presented themselves bringing with them a golden net work. Receiving the elect in that net, and presenting him to the mother, they said to her, 'princess! rejoice, unto thee a son is born.'

"Other mortals on their issuing from their mothers' womb, come forth involved in defilement. Not so, a Buddho elect. A Buddho elect, with extended arms and legs, and erect in posture, comes forth from his mother's womb, undefiled by the impurities of the womb, clean and unsold, refulgent as a gem deposited in a *Kasmir* shawl. Though such be (the purity of his birth) equally for the accommodation of the Buddho elect, and of his mother, two streams descending from the skies on the body of each, refreshed them exquisitely.

"Thereupon the four great kings (of the *Dēvalókā*) receiving him out of the golden net from the hands of the attendant brahmāno, placed him in an *ajinappawani* (antelope's hide) fitted for state purposes, and delightful to the feel; from their hands, men received him in a *dukāla-chumba-takān*. Extricating himself from the hands of the men, and placing himself on the earth, he looked towards the east. The many thousand *Chakkawāḍis* appeared to him as but a court-yard. Then the *dēvas* and men of those realms, making offering of garlands of fragrant flowers, &c. made this exclamation: 'O! great man: the equal to thee exists not here; where will a superior be found.' Having in the same manner looked at the ten points of the compass, without finding his equal; facing the north, he advanced seven paces. He, who thus advanced, trod on the earth—not on air; was unclad—not clad; was an infant—not a person of sixteen years of age (an adult); and yet to the multitude he appeared to advance on air—superbly clad and to be full sixteen years of age.

"Thereupon stopping at the seventh step, and proclaiming this important announcement, he shouted forth with the voice of a lion: 'I am the most exalted in the world: I am the most excellent in the world: I am the supreme in the world: this is my last existence: henceforth there is no regeneration for me.' "

After mentioning certain circumstances connected with the former birth of BUDDHO, and specifying that on the same day with himself, there also came into existence—the princess YASÓDARÁ (his wife); CHHANNO and KÁLUDÁYI, his ministers; his charger *Kanṭhako*; his sacred tree, the *bódhi*; and the four mines of wealth;—the *Atthakāṭhā* proceeds:

"The inhabitants of both cities (*Dēvadaṇḍa* and *Kapilawatthu*) taking charge of this great personage conveyed him to *Kapilawatthu*.

"At that period, a certain *tāpaso*, named KALADE'WALO, who was a confidant of the māha rāja SUDDHODANO, and who had acquired the eight *samāpatti*, having taken his meal,—for the purpose of enjoying his noon-day rest,—repaired to the *Tawatiná* realms. He there found the host of *dēwata*, in the *Tawatiná* realms, revelling in joy, and in the exuberance of their felicity, waving cloths over their heads and asked, 'Why is it that ye thus rejoice, in the fulness of heart's delight? Tell me the cause thereof?' The *dēwatá* thus replied, 'Blessed! unto the rāja a son is born, who seated at the foot of the bo tree, having become Buddho, will establish the

supremacy of *dhammo* : and we shall be blessed with the sight of the many attributes of his Buddhohood, and with the hearing of his *dhammo*. It is from this cause that we rejoice.'

" Thereupon the said *dēvata*, the *tāpaso*, on hearing this announcement of theirs, descending from the supreme *Dēvaloko*, enchanting with its golden glitter; and entering the palace of the monarch SUDDHODANO, seated himself on the pre-eminent throne erected therein. He then thus addressed the *rāja* who had accorded to him a gracious reception. ' *Rāja!* to thee a son is born : him I will see.' The *rāja* caused the infant, richly clad, to be brought, in order that he (the infant) might do homage to the *tāpaso*, *Dēvalo*. The feet of the great elect, at that instant, performing an evolution, planted themselves on the *jētā* (topknot of *Dēvalo*) which glittered, from its hoariness, like unto the fleecy white cloud impregnated with rain. There being no one greater to whom reverence is due than to a Buddha elect, who had attained the last stage of existence,—instantly rising from the throne on which he was seated (*Dēvalo*), bowed down with his clasped hands raised over his head, to the Buddha elect; and the *rāja* also, on witnessing this miraculous result, likewise bowed down to his own son.

" The *tāpaso* having perceived the perfection of the immortal attributes of the elect, was meditating whether he would or would not become the supreme Buddha; and while thus meditating, he ascertained by his power of perception into futurity, he would certainly become so; and smiling said, ' This is the wonderful mortal.' He again thus meditated : ' am I, or am I not destined to behold his achievement of Buddhohood ?' and said, ' No I am not destined : dying in the interval, though a thousand *Buddhā* be henceforth manifested, it will not be vouchsafed to me to participate in such a blessing : I shall be regenerated in realms inhabited by incorporeal spirits : never shall I behold the wonderful mortal : a mighty calamity is impending over me.' Having thus divined, he wept.

" The bystanders remarking, ' Our *ayyo* (revered teacher) having this moment smiled, has now commenced to weep,' inquired, ' Is there any misfortune impending over the infant of our ruler ?' The *tāpaso* replied, ' Unto him there is no impending calamity : beyond all doubt he is destined to become Buddha.' ' Why dost thou then weep ?' ' I am not destined to see so wonderful a mortal as this, on his attaining Buddhohood : most assuredly unto me this is an awful calamity. I weep in the bitterness of my own disappointment.'

" Thereafter on the fifth day after the birth of the elect, having bathed his head and nursed him, ' let us (said the officers of the court) decide on his name.' Furnishing the palace with the four regal incenses, decorating it with the four prescribed descriptions of flowers, and causing rice to be dressed in pure milk; and then assembling eight hundred* brahmins who had achieved the knowledge of three *vēdas*,—seating them—feasting them on the milk-rice, and paying them due honor—they required of them to examine the indications (about the person of the elect), saying ' what is he to become ?' Among them there were eight named *Rāma*, &c. who were the interpreters of signs. Of these, seven raising two fingers up, declared, ' He who is endowed with these signs, if he lead the life of a layman, is destined to be a *Chakkavattī rāja*; and if he enter into the sacerdotal order, a Buddha.' The youngest among these, a brahmin whose patronimic was KONDANNO, seeing by the supreme attributes which attached to the signs of the Buddha elect, that he was not destined for a lay life;—raising up one finger only declared : ' Most assuredly exempted as he is from the dominion of sin, he is destined to be Buddha.' Then those who were conferrers of a name, as he was destined to be the (*sabbaloka-siddhi-karanattā*) ' establisher (of the faith) throughout the world,' gave him the name of ' *SIDDHA'TTO*' (the establisher).

* From other passages it would appear that this numeral was 108.

" Thereupon the brāhmas, returning to their homes and assembling their sons, thus addressed them. ' We are advanced in years : it is doubtful whether we shall, or shall not, witness the attainment of the state of Buddhohood of the son of māha rāja SUBBHO'DANO. Do ye, however, when he attains the state of omniscience, having previously entered the sacerdotal order, also become members of his fraternity.' Thereafter seven of them, in due course of nature, were disposed of according to their deserts (by death). The youth KONDANNO alone (survived) free from all maladies.

" On hearing however, the aforesaid prediction, the said rāja thus interrogated them : ' By what manifestation is it, that ye will be able to ascertain when my son will become a minister of religion ? ' ' On his beholding the four predictive signs,' (*pubbenimittāni*.) ' What ! what are they ? ' (asked the king impatiently). ' The decaying,' ' the diseased,' ' the dead' and ' the ordained person.'

" Among the eighty thousand allied tribes who assembled on the day (of conferring the name) each undertook to devote a son (to the prince) saying : ' Whether he becomes a Buddho or a king, we will each assign him a youth. Should he become a Buddho, attended by a retinue of royal disciples, he will perform his pilgrimage ; and should he become a monarch, still surrounded by a suite of princes, he will fulfil his destiny.'

" Thereafter the rāja assigned to this great personage wet nurses of surpassing personal beauty, and free from all bodily infirmity ; and the great elect grew up in the midst of sumptuous splendour, attended by a great suite ; (but secluded from all other worldly intercourse in order that he might not meet the aforesaid predictive signs.)

" Subsequently, on a certain occasion, the rāja had to celebrate the sowing festival. On that day, the rāja departed for this sowing festival, clad in splendour and attended by a magnificent cortege. He took into his own hand the golden plough of the illustrious festival. The officers of state and others used silver and other descriptions of ploughs. On such a day, a thousand ploughs are prepared. The wet nurses attendant on the Buddho elect (who formed with their charge a part of this suite), saying among themselves ' let us also witness the magnificence of our sovereign'—came out from within the curtain that screened them. The elect then looking in all directions, and not perceiving any one, quickly rising and seating himself upright in his canopy, indulged in the *śūnyānāsati* meditation ; and acquired the *patamajjhāna*. The wet-nurses delayed a short while and partook of food and beverage, and the shadows cast by the other trees past off in another direction : but the shadow of the tree (under which the elect was) remained steadfast in a circular form. His wet-nurses, exclaiming : ' is not our lord's son quite alone ? ' rushed in abruptly ; and on raising the curtain, and beholding the miracle of witnessing him seated in his royal canopy, they reported the circumstance to the rāja. The king, quickly approaching, bowed down to him, saying, ' Beloved ! this is my second act of reverence to thee.'

" Thereafter, in due course, this great personage, acquired the age of sixteen, and the rāja built for him three palaces adapted for the three seasons. The *Rāmmā*, *Surammā* and *Subbā*, one of nine, another of seven, and the other of five stories. The edifices nevertheless were of the same height, but the stories were constructed on different plans.

" The rāja then thus thought, ' my son is come of age ; raising him to the sovereignty, let me behold his regal prosperity,' and dispatched leaves (dispatches) to the *Sākya* princes, announcing ' my son is of age : I am causing him to be installed in the sovereignty. Let them all send, from their own homes, their grown-up daughters to this house.' Those princes on hearing that message, replied ' Although

the prince is in every respect endowed with personal beauty, he is untaught in a single martial accomplishment, and is incapable of controlling women : we cannot therefore give our daughters.' The rāja on having heard the reproach, repairing to the son, communicated the same to him. The Buddhō elect replied, 'What accomplishment is it requisite for me to exhibit?' 'It is requisite, beloved, that you string the bow, requiring a thousand persons to bind.' 'Well then have it brought.' The rāja causing it to be brought, presented it to him. It was a bow which required a thousand persons to string and unstring it. This great personage, receiving that bow, while yet seated on his canopy, twisted the bow-string round his great toe, and drawing it with his toe, strung the bow ; and taking the bow in his left hand and drawing the string with his right, let it (the cord) fly. The whole town started, and to the inquiry, 'what noise is this?' the answer was 'the clouds are rolling with thunder ; some others observed, 'ye know nothing about it, it is not the rolling of thunder : it is the ringing of the bow which requires the strength of a thousand persons which the great archer, the prince endowed with halo around his person, has rung.' The *Sākya* princes on hearing of this, from that circumstance alone, commencing to rejoice, were highly gratified.

"The great mortal then inquired, 'what more should be done.' They replied, 'It is requisite that an iron target eight inches thick, should be pierced with an arrow. Having pierced it, he said, 'what else.' 'It is requisite, that a plant of the *asaṇḍ* tree, four inches thick, should be pierced.' 'Having transfixed that what else should be done?' 'Then carts filled with sand and with straw.' The great elect then transpiercing the straw cart drove the arrow one *usabha* deep into the water, and eight *usabha* into the earth. They then said, it will be requisite to pierce a horse hair, guided by the mark afforded by the suspended fruit of the *vaṅṅadā* (which is attached to the hair). Replying 'hang it up at the distance of one *yōjana*' he shot his arrow in a direction which was as dark, under the obscurity of dense clouds, as if it were night ; and pierced the horse hair, which at the distance of one *yōjana* was indicated only by the *vaṅṅadā* which was suspended from it, and it entered the earth. If fully related, these were not all that the great mortal exhibited on that day to the world, in proof of his accomplishments in martial deeds. Thereupon the *Sākya* tribes sent their daughters superbly decorated. There were forty thousand dancing and singing girls. The princess (who was afterwards) the mother of RA'HULO, became the head queen.

"The great mortal, like unto a celestial prince, surrounded by his heavenly host of damsels, and attended by his female band of musicians, dwelt in his three palaces adapted to the three seasons, enjoying his great prosperity. Thereafter, on a certain day, wishing to inspect his grounds in his pleasure garden, he ordered his charioteer to prepare his state conveyance. He replying '*saddha*,' and fully decorating the carriage, and harnessing to it four white horses, swift as the wind and the swallow, and of the *saddha* breed, reported it to the Buddhō elect ; who entering the chariot, which was like unto a heavenly mansion, proceeded in the direction of the pleasure garden.

"The *dēwatā*, saying to themselves, 'the time is at hand for prince SIDDHATTO to attain omniscience, let us present to him the predictive signs,' exhibited to him a certain *dēwatā* transformed into the character of a decrepid object, wasted in appearance, with decayed teeth, grey hairs, and bent posture, tremulously leaning on his staff. Him the Buddhō elect and charioteer alone saw. The Buddhō elect then thus inquired : 'Charioteer ! who is this person ? His hair also is not like that of others,' and having also made the other inquiries, as recorded in due order in the *Mahāpaddana suttā*, and listened to his answers, he observed (to the charioteer), 'My friend, let this be received as a type of the degradation of this existence, as it

is a proof that wheresoever an individual may be born, he is subject to decay.' Deeply afflicted in mind, giving up his excursion, he re-ascended his palace. The rāja inquired : ' why has my son returned ? ' ' Lord ! because he saw a person in a decrepid state.' The indulgent monarch then ordered guards to be stationed at the distance of half a *yōjanam*.

" Again on a subsequent day, the Buddha elect having visited the pleasure garden and having beheld a diseased person, represented by the *dēvatā* aforesaid ; and having made inquiries in the manner already explained, afflicted in mind, he then also gave up his excursion, and reascended the palace. The rāja, on hearing this, sent a band of musicians (to amuse him) saying ' they will divert his mind from his desire, to enter into priesthood ; ' and giving up the former guard he established others all round, at the distance of three *gāvūtāni*. In the same manner having beheld a corpse, on a subsequent occasion, the rāja established guards at the distance of four *gāvūtāni*.

" And again on a certain day, the Buddha elect, while on an excursion to the pleasure garden, noticed a well clad, and completely enveloped form, exhibited by the same *dēvatā*, and said, ' My friend, charioteer, what is the name of this person ? ' The charioteer, from that period not being a *bodḍhoṭpādo* (an age in which the Buddhistical creed prevails), was incapable of explaining either the nature of the sacerdotal state, or the merits appertaining to that sacerdotal state, excepting by the miraculous agency of the *dēvatā* ; replying therefore by their inspiration, he said, ' that the person is a priest,' and explained the merits of the priestly state.

" The Buddha elect, impelled by his desire to become a priest, repaired on that day to the pleasure garden. Those Buddhā elect, who are manifested in ages when the term of human existence is protracted, beheld these predictive signs at intervals of one hundred years each, but our Buddha elect, having been manifested in a short-lived age, visited the pleasure garden at intervals of four months. The *Dīghabhāṇās* fraternity, however, assert that he witnessed all the four predictive signs on the same day.

" There, having enjoyed the sports of the pleasure garden, during the day, and having bathed in the reservoir appropriate to occasions of festivity, at the setting of the sun, he seated himself on the rock of festivity, in order that he might redecorate himself (after his bath). The *dēvatā* WISSAKAMMO, ordered by SAKKO, the king of *dēvatā*, who knew his inmost wishes, repairing thither in the character of a barber decorated him with the vestments of the *dēvatā*.

" While some from among his female bands were playing airs on musical instruments, and the beauties of the *Sākya* tribes were yet hymning forth the canticles of triumph and gratulations, peculiar to the brahminical observances then prevalent, unto the Buddha elect, who was thus adorned with all his insignia of celestial majesty, mounting his chariot, he departed. At that instant, (YASO'DARA) the mother of RA'HULO had given birth to a son ; and the mahā rāja SUDDHÓDANO, on hearing this news, desirous of gladdening his son, sent him a message (to announce the event). The Buddha elect, on receiving this announcement exclaimed, ' RAHULO being born creates (another) tie (in domestic affections).' The rāja inquired (of his messenger,) ' what did my son say ; ' and learning what his exclamation was ; said, ' let my grandson be henceforth called prince RA'HULO.'

" The Buddha elect mounting his superb chariot, re-entered the town, attended by his retinue in great pomp and magnificence. At that moment, a virgin of royal extraction named KISA'GÓTAMI, who was in the bloom of personal beauty, and endowed with graceful fascinations, was standing in the upper story of his superb palace, and beheld the personal magnificence of the Buddha elect, who was in the act of entering the mansion : and under the impulse of the fervour of her admiration, she chanted forth this hymn of adulation.

*' Nibbutānā sē mātā, nibbutānā sō pitā
Nibbutānā sē nāri yasāya idisogati.'*

" ' Whosoever's destiny has been such as his, most assuredly his mother must be blessed ; most assuredly his father must be blessed, and most assuredly his consort also must be blessed.'

" The Buddho elect listened to this hymn, and thus thought : ' the gratulation she has uttered is worthy of being heard by me. It is requisite that I, who am performing my pilgrimage in search of nibbāna, should this very day, abandoning my lay connections, and departing (hence) and entering into the priesthood, prosecute my pursuit of nibbāna ; and adding ' let this be a gift to serve as a preceptor (of piety) to her ; he detached from his neck a pearl necklace worth a lakh, and sent it to KISAGÓTAMI. She, in excess of her exultation, exclaimed, ' prince SIDDHATTO, captivated by me, sends me a present.'

" The Buddho elect, with the utmost pomp, ascended the superb and enchanting palace, and laid himself down on his state bed. Thereupon women in the bloom of youth, resembling the celestial beauties of the *Tāvātīsa* heavens, with visages resplendent as the silvery full moon, with lips in color like the *bimbothala** fruit, with beauteous teeth, white, pure, even, smooth and without interstice, with jet black eyes, and jet clustering locks, graceful in their movements like the voluptuous swan, with arched dark eyebrows, and breasts fully developed, globular, equal in size and exquisitely placed, covered only with the *mékhalā* (the medallion of the zone) which was set with gems in newly burnished gold and silver, with **** plump, and circular as a wheel, and with thighs round and smooth as an elephant trunk, excelling in dance and song, taking with them musical instruments of melodious tones, and crowding around the great mortal, with the intent of diverting him from his purpose, by their voluptuous fascination, began to sing and to dance. The Buddho elect, however, being entirely exempt from the influence of carnal passions, took no delight in the dance and song ; and in a short interval fell asleep. They seeing this (indifference), and saying if the individual for whom we have commenced our song and dance is gone to sleep, why should we fatigue ourselves ?' and dropping each the instrument she had taken, on the spot on which she was standing, they all laid themselves down. The lamps of scented oil continued burning.

" The Buddho elect, on awaking, still seated cross-legged on the bed on which he had been sleeping, surveyed these sleeping females, who had laid aside their musical instruments, some with their cheeks wet with the saliva that had flowed from them ; some gnashing their teeth ; some muttering ; some with round mouths (gaping), some denuded by their covering being displaced ; some in ungraceful postures, and some with dishevelled hair representing so many objects fit for a sepulchre.

" The great mortal, on beholding this spectacle, became the more strongly confirmed in his abhorrence of sinful courses. Unto him, the splendid and charming palace, which was like unto the mansion of the thousand-eyed deity (*INDRA*), became (as it were) a disgusting object, filled with loathsome corpses, like unto an *Amakarasāna*† (a catacomb) ; and the three realms (of the universe) appeared to him as if they were a single habitation involved in flames. Then resolving ' most assuredly the crisis is at hand ; my mind is fully made up to enter into priesthood ; it is proper that this very day my final separation should take place ; and rising from his bed and approaching the door of his chamber he called out ' who is here ?' CHHANNO (who was born on the same day with BUDDHO) was sleeping at the door, making the threshold his pillow, and replied ' prince, it is I, CHHANNO.'

' This very day am I resolved to effect my great final deliverance. Without utter-

* A creeper, *Tryonea grandis*.

† Literally "raw cemetery" in which bodies were left unburnt or uninterred.

ing a word, bring me a swift *sindhawa* steed.' He, replying '*sadhu* Lord !' and taking the trappings of the horse, repaired to the stable ; and seeing there the superb charger *Kanthako*, who was capable of overcoming all his foes, standing in his delightful stall, under a canopy decorated with jessamine flowers, and lighted up with lamps of fragrant oil, he said ' It is proper that he should be caparisoned as a state charger, to be used to-day for the final deliverance of the prince ;' and he caparisoned *Kanthako*. The said charger in the act of being accoutred knew (what was to happen) ; and exulting in his master's approaching assumption of priesthood, neighed loudly, as if he had said ' this caparisoning is unusually tight ; not like the saddling of other occasions, for an excursion to the pleasure garden : most assuredly, this very day the prince takes his great final departure.' That neigh resounded through *Kapilawatthu*. The *dēwatā* however suppressing the sound prevented its being heard by any one.

" The Buddha elect, saying ' let me see my son once more,' and proceeding from his own to the chamber of the mother of RA'MULO, gently opened the door. At that moment a silver lamp, lit with fragrant oil, was shedding its light on the interior of the chamber ; and the mother of RA'MULO was slumbering with her hand resting on the head of her infant who was reposing under a superb canopy, on a bedding formed of one *emmanā* of the common and the Arabian jessamine. The elect, his foot still resting on the threshold, and intently gazing—thus meditated. ' If I remove the hand of the princess, to take up my child (and embrace him), she will be awakened ; and thus an impediment will be produced to my departure. Let me then, after I have attained Buddhohood, return and see my son.' Descending from the upper apartment of the palace, and approaching his steed, he thus addressed him : ' Do thou, my cherished *Kanthako*, in one night translate me ; and, as the consequence of that translation, achieving Buddhohood, I shall translate this world together with those of the *dēwā*.' Then springing aloft, he seated himself on *Kanthako*. The said *Kanthako*, was eighteen cubits long from his neck—his height was in proportion—well formed, swift and in good condition, and in color like a bleached shell.

" The Buddha elect, who had mounted this charger, having desired CHHANNO to hang on by the tail, in the middle of the night approached the principal gate of the town. At that time, the guards, whom the *rāja* had stationed to prevent the escape of the Buddha elect, were still watching, being in number one thousand to each doorway in the gate. The elect, however, had the power of one hundred thousand *kotiyo* of men, or the strength of a thousand *kotiyo* of elephants. There he thus resolved. ' Should the gate not be opened, this very day, mounted on *Kanthako*, together with CHHANNO clinging to his tail, holding the steed fast between my thighs, and springing over the rampart eighteen cubits in height, let me quickly escape.' CHHANNO and *Kanthako* concurred in that resolution.

" The tutelar *dēwatā*, however opened the gate.

" Instantly MA'no (death), the agent of sin, saying, ' let me stop the great mortal, and rising aloft into the air, thus addressed him : ' *Maddhewo* depart not : on the seventh day from hence, the heavenly *Chakkaratanan* will most certainly come to pass. Then thou shalt exercise sovereignty over the four great quarters (of the earth), together with their two thousand *īśas* : blessed ! wait.' The great mortal asked, ' Who art thou ? ' ' I am Wassawatto.' ' I am aware that both empire and universal dominion are proffered to me : I am not however destined for royalty : depart MA'no ! approach not this. I shall become Buddha, making the ten thousand realms of the universe quake, in acknowledgment of there being no one greater than myself.' He thus spoke ; and MA'no vanished.

" The great mortal in his twenty-ninth year, relinquishing the attractions of his

imperial greatness, with the indifference that he would cast spittle from him, departed from his mansion the seat of that regal splendour; and in quitting the city, on the full moon day of the month *Asāhi*, during the ascendancy of *Uttarassāhi* lunar mansion, he was seized with a desire to gaze on the city. At the instant of being seized with this wish, that portion of the ground on which (the city stood) spun round, like the potter's wheel. By this means the Buddha elect (without turning round) surveyed *Kapilawaṭṭhu* from the spot on which he stood, and having noted the spot on which *Kaṇṭhako* had stood, as the destined site of a *chétīyo*, he turned *Kaṇṭhako's* head to the direction in which he ought to go.

"While the elect was proceeding in his journey, with great pomp and pageantry, sixty lakhs of *dēvatā* were preceding him, bearing torches. In the same manner on the right hand side of the pilgrim there were sixty lakhs of torches; and the same on the left. Other *dēvatā* doing homage with fragrant flowers and garlands with sandal-wood dust and *chambards* and flags and pennons, attended him in procession, and kept up the symphony of heavenly song and music.

"The elect who was making his progress in pomp such as this, having in the course of the night traversed three kingdoms, and performed a march of thirty *yojana*, reached the bank of the *Anomā* river. The elect stopping on the bank of the river thus inquired of *CHHANNO*. What is the name of this river? 'Lord! its name is *Anomā*.' Replying 'nor will there be any *Anomā* (inferiority) in my ordination,' he pressed his heel to the horse, and gave him the signal to leap. The animal, springing aloft, alighted on the opposite bank of a river 'eight *maṇḍa* in breadth.'

"The Buddha elect descending from his steed on a bank of sand, which was like unto a heap of pearls, thus addressed *CHHANNO*; '*CHHANNO*, my friend, taking with thee my regal ornaments and my charger *Kaṇṭhako*, depart. I am going to enter into priesthood.' *CHHANNO* replied, 'Lord! I will also be ordained.' 'It will not be permitted unto thee to enter the priesthood: depart.' Having, in this manner, three times refused his solicitation; and made over the jewels and *Kaṇṭhako* to him, the elect thus meditated: 'These locks of mine are unsuited to the sacerdotal state;' and, taking up his superb sharp-edged sword in his right hand, and seizing his tresses together with the diadem on them, chopped them off. The hair was then only two inches long; and it arranged itself (on his head) curling to the right hand; and during the rest of his life, his hair remained of the same length. His beard also was proportionate, nor had he occasion to shave any more.

"The elect then taking up his locks with the tiara attached, threw them up into the air, saying 'If I am to become Buddha let them remain poised in the air; and if not let them descend.' The tiara knot, rising into the air one *yojanā* in height remained poised there. Thereupon *SAKKO*, the king of the *dēvatā*, beholding it with his supernatural eyes, and receiving it into a receptacle in height one *yojanā*, transferred it to the *Tāvātīsa* realms, and deposited it in a *chétīyo* (thence called) the *Chāidmāni*.

"The elect then thus meditated: 'these raiments, the fabric of *Kāsi*, are costly, and unsuited to my sacerdotal condition.' Thereupon *GATIKĀ'RO*, the great brahman who had formerly, in the time of the Buddha *KASSAPO*, befriended him, out of the friendship that had subsisted during the whole *Buddhāntaro*, thus resolved: 'My friend, on this very day, is about to sever himself finally from lay connections: let me repair to him, taking with me the (indispensable† portions of the) prescribed

* This remark involves a pun:—a pun however is by no means a matter of levity in Buddhistical literature.

† These articles are indispensable, there are others permissible.

sacerdotal equipments,—respecting which BUDDHO himself has (subsequently) said, ‘These are the eight requisites allowable to an orthodox bhikkhu. Three robes, a dish, razor, sewing-needle, waist-band and bathing-cloth.’ Bringing these eight requisite sacerdotal equipments, he (by *ditthāro*) presented them.

“The great mortal then assuming the character of the *Arahantā*, by putting on the garb of the pre-eminent priesthood, commanded CHHANNO to depart; saying to him: ‘CHHANNO, inform my wife and father of my happiness as a message sent by myself.’ Thereupon CHHANNO, having bowed down to the great mortal, and walked* round him, departed. The charger *Kanthako*, who had been listening to the conversation of the Buddha elect with CHHANNO, thus bewailed: ‘Henceforth my master will not be seen again;’ and when he had proceeded a certain distance, and the (Buddho) was no longer visible, unable to endure his grief, bursting her heart (*Hodayāphāṇā*) *Kanthako* expired; and was reproduced in the form of a *dēvā* in the *Tāvātīśā* heavens, where the *Surārupe* (the *Asurā*) have no dominion. His regeneration (there) may be learned in the *Wimalatthūvāṇīśā*, the *Aṭṭhakaṭṭha* on the *Vimānasmāṇikā*.

“Unto CHHANNO, in the first instance, there was but one engrossing object of grief (the loss of his master, prince SIDDHATTO). The second cause of his grief was the death of *Kanthako*: deeply afflicted, bewailing and weeping, he departed.

“In the land in which the Buddha elect assumed his sacerdotal character, there was a mango grove called *Asupiyā*. There, having passed seven days, in the enjoyment of sacerdotal happiness, thereafter dazzling in his yellow raiment, like unto the full disk of the sun glowing under the blazing clouds of a glaring sun-set, and though alone, imposing in appearance as if attended by multitudes, and administering to beasts and birds a measure of happiness as if heaven was presented to their sight; roaming like the solitary lion, and pacing like the tusked stately elephant; and treading as if to steady the earth, this lion of the human race, in a single day, performing a journey of thirty *yōjanā* and crossing the *Gangā* (*Ganges*), a river with high breaking waves and unobstructed course, entered the city called *Rājagahā*, celebrated for the pre-eminent and superb palace resplendent with the rays of the gems with which it was embellished; and having made his entry, without distinction (of houses) he begged for alms.

“By the appearance of the Buddha elect, the whole city was thrown into commotion as if *Dhanapālo* (a furious tusk elephant) had entered the town;—as if the chief of the *Asurā* had invaded the city of the *dēvā*. While the great mortal was in the act of begging alms, the inhabitants of the capital confounded by the joy produced by the charm of the appearance of that great being, became incapable of resisting the desire of gazing at the great elect. Among themselves, these people kept saying one to another. ‘Friend! who is this? can it be the full moon descended among us out of dread of RA’HU, concealing the rays with which he is endowed? Such a one was never seen before.’ Smiling at his suggestion, another said, ‘This is the god of love with his floral banner: disguised in person, he has come to revel among us; having observed the great personal beauty of our monarch and of our fellow-citizens.’ Laughing at him another said, ‘Friend! art thou mad: the god of love has half of his body destroyed by the fire kindled by the jealousy of *Isso*’ (*Isvara*), it is not he: it is the chief of the *dēvā*, the thousand-eyed deity (*INDRA*) who has come here, imagining that it is the celestial city.’ Another again playfully ridiculing him, said, ‘Friend! what nonsense art thou talking. Where are his thousand eyes? where is his thunderbolt and where is his (*elephant*) *erāwano*? Assuredly he is BRA’HMA, who, having witnessed the indolence of the brahmas, has come hither to teach the *vēda* and their accompaniments.’ Another ridiculing the

* This proceeding is a mark of respect frequently mentioned.

whole of them, said, 'He is neither the moon, the god of love, nor the thousand-eyed deity, nor yet *BRĀHMA*'. He is the wonderful personage, the supreme, and the teacher of the world.'

"While the inhabitants of the town were thus discussing the matter, the officers of state, repairing to the *rāja* *BIMBISA*†^{no} said: 'Lord! either a *déwa*, a *gandhabbo*, or else a *rāja nāga*, or a *yakkho*, is wandering about our town, begging alms.' The *rāja* on hearing this, still remaining in the upper apartment of the palace, but having obtained a sight of the great mortal, impressed with feelings of wonder previously unknown, thus instructed his officers: 'My men, retire, and compose yourselves. Should he be an inhuman being (*yakkho*), on his departing from the city, he will render himself invisible. Should he be a *dévalā*, he will depart through the air. Should he be a *nāga rāja* he will escape diving into the earth; and should he be a human being, he will partake of whatever alms he may obtain.'

"The great mortal, who exercised the most perfect self-possession and control over his own senses (yet attracted the gaze of the multitude by the splendour of his personal appearance), did not permit himself to look at any object more distant from him than the length of a yoke-pole. Having collected as much food as he could eat, being the mixed scraps (which had been thrown into his alms-dish by many), departed out of the gate by which he had entered the city; and seating himself facing the east, under the shadow cast by the *Pandavo* mountain, although disgusted at the repast, repressing his disgust, he ate it*.

"Immediately the persons sent by the *rāja* returning, reported this circumstance. On hearing this account from his messengers, the ruler of *Magadha*, the *rāja* *BHUBHAR*, who despised the pursuit of frivolous objects, and aimed at results as steadfast as the mountains *Méru* and *Mandāro*, impelled by the desire to see the Buddha elect, which was produced by the account given of his pious bearing—departing from the town and repairing to the *Pandavo* mountain, and there descending from his conveyance and approaching the Buddha elect, with his permission seated himself (near him) on the ground, which (intercourse) was as refreshing as the affections of relations. Charmed with the deportment of the Buddha elect he offered to him the provision of every luxury. 'Mahā *rāja* (replied the elect), to me there is no longer need either of the enjoyment of wealth, or the gratification of the passions: severed from the domestic and lay ties, my aspirations are directed to the attainment of supreme omniscience.' The *rāja*, after having, in various ways, renewed his entreaties finding that he would not gain his assent, said, 'Most assuredly thou wilt become Buddha: my dominion should be visited the first by thee in thy Buddhohood,' and returned to his capital.

"Thereafter the Bódhisatto, in due course, pursuing his alms pilgrimages, became acquainted with *ĀLAKA*†^{no} and *UDDAKKARAMO*; and acquired from them the *Samāpatti*. Finding that the said *Samāpatti* was not the road that leads to Buddhohood, relinquishing the same, he resolved to devote himself to the *padhāna*, and repaired to *Ururōhā*. Finding that a delightful place, sojourning there he devoted himself to the *Mahāpadāna*.

"Four persons, the sons of the brahmins who had been consulted (on the day that a name was selected for the Bódhisatto), as well as *KONDANNO* (the youngest of

* This must have occurred in the forenoon, as no substantial food can be taken by Buddhist priests after mid-day.

† This interview is described in greater detail elsewhere, during which *BIMBISA*†^{no} ascertained the elect to be the son of *SUDDHÓDANO*, the ally and friend of his own father *BHĀTIVO*, the late *rāja* of *Magadha*.

the eight brahmins consulted) these five, having entered into the sacerdotal order, in the course of their pilgrimage in search of alms, through villages, towns and kingdoms, came to that place where the Bódhisatto was. For a period of six years these persons continued his personal attendants, sweeping his cell and performing other menial offices, unto him who was devoted to the *Mahāpaddāna*; and they constantly indulged in this expectation. 'Now he will become Buddho! Now he will become Buddho!'

"The Bódhisatto resolving, 'Let me submit myself to the ultimate extremity of penance;' brought himself to subsist on a single grain of *tīla* (*sesamum*) or of rice, and even passed his day entirely without nourishment. The *déwatā* however preserved him by infusing (by their supernatural means) juices of food (gravy) into those pores of the skin through which the hairs of the body grow. Thereafter from his continued starvation, he reduced himself to the state of a perfect skeleton; and his person which had been of a golden hue turned black, and the thirty-two attributes of manhood (peculiar to Buddhá and *Chakkawatti* rāja) disappeared.

"The Bódhisatto having been brought to this last extremity by adherence to his penance, deciding again, 'This is not the proper road to Buddhohood;' and for the purpose of procuring full supplies of food, he made alms pilgrimages through towns and villages, and provided himself with provisions.

"Thereupon his thirty-two special attributes of manhood were again restored, and his person regained its golden hue; and thence his (aforesaid) confraternity, composed of the abovementioned five *bhikkhus*, saying to themselves: 'Although for a period of six years, he has consigned himself to penance, and has fasted to attain the state of omniscience, he is now making his pilgrimage through towns and villages begging alms offerings in his desire to provide himself amply with food. (By such weakness) what can be effected? He has certainly made a great effort: from it, what have we benefitted?' and then forsaking the great mortal, they repaired to the *Isipatana* in *Bārānasi*.

"At *Uruweli* in the town *Sandāi* at the house of the proprietor *KUTIMBIKO* of *Sandāi*, there was a maid named *SIGĀ'TA*. On the full moon day of the month *We-sākhā*, having partaken of a dish of rice prepared in sweet milk by her, who presented to him with delight—taking up the golden dish (in which it was served) the Bódhisatto threw it from the bank of the *Néranjara* river, up the stream; and thereby awoke *KA'LO* the *nāga* rāja. The Bódhisatto having taken his noon-day rest in the delightful deep green forest of *sal* trees, which is garnished with fragrant flowers, on the bank of the *Néranjara* river, in the evening, he repaired to the foot of the *Bodhi* tree by the path that had been decorated for him by the *déwatā*.

"*Déwatā*, *nāga*, *yakkhā* and *siddhā* made offerings to him of celestial fragrant flowers and odoriferous ointments. At that instant, a certain brahman grass-carrier named *SORRHIYO*, who was carrying some (*cusha*) grass,—in his way, presented himself before the great mortal; and recognizing who he was, bestowed eight bundles of grass on him. The Bódhisatto accepting that grass, and three times walking round the *Assathā-bodhi*, the monarch of trees and pride of the forest, which was as verdant as the *Anjanagiri* mountain; and, intercepting the rays of the sun, was as refreshing as his own benevolence, and which attracted flocks of melodious birds—and was embellished with branches which quivered under the gentle breeze as if dancing with joy—stationed himself in the north-eastern side of the tree; and sprinkled that grass on the ground holding it by the ends. Instantly that grass was transformed into a throne fourteen cubits in height—the blades appearing like ornamental lines drawn by a painter, and as soon as the Bódhisatto seated himself on the grassy carpet, on the throne fourteen cubits broad, young leaves from the tree, resembling coral resting on plates of gold, fell on him.

"On the Bódhisatto seating himself there, MA'no (death) in the person of *Wasavatti dévo*, saying 'Prince SIDDHATTO is endeavouring to overthrow my dominion over him: let me not yield to that desire;' and explaining this resolution to his own legions with the arms of MA'no in his train, he set out. The said army of MA'no extended twelve *yojanā* in front and the same on the right and on the left, and in the rear it extended to the confines of the *Chakkavāḍān*; and nine *yojanā* up into the air. The sound of its uproar, as if bursting the earth, was heard from the distance of a thousand *yojana*.

At the same time SAKKO, the king of the *dévo* stationed himself near him, sounding his *Wijayuttara* chank, which chank (shell) is one hundred and twenty cubits long: *Panchasikho*, the *Gandhabha dévo*, bringing with him his *Bhūmapādā*, lyre, three *gāvūtāni* in length, stationed himself also there, playing and singing appropriate hymns of joy. The *déva rāja* SUTTA'no, bringing with him his heavenly *chāmard*, in length three *gāvūtāni* and resembling the brilliancy of the rays of the planet (the moon) which presides over the night, likewise stationed himself there greatly fanning him. And the *Brahmā Sahaspati*, holding over the head of BHAGAWA' his white *chhatta* (parasol of dominion) three *yojanā* in width, as if it were a second disc of the sun, also stationed himself there. The king of the *Nāga Mahākhālo*, presented himself attended by his eighty thousand choristers, singing hymns of joy and bowing down to the great mortal. The *dévatā* in the ten thousand *Chakkavāḍāni* attended, presented offerings of fragrant garlands, frankincense and pulverized scent.

"The *dévo*, MA'no, then mounted his *Girimikhālo* tusk elephant, which was one hundred and fifty *yojanā* high, like unto the *Girivāhara* mountain, very superb to the sight, and capable of overcoming his enemies; and raising up his many thousand arms, provided himself with weapons of every description, by not taking up any two weapons of the same kind. His army also equipped with swords, axes, javelins, bows bent by great strength, arrows, *lāhala*, spikes, the broad spikes, the *tāmara*, clubs, (sharp-edged missile in the form of) rings, the *kanaya*, *kappana*, *hoppana* and (missile) wheels, and assuming the faces of the *ruwa* (a description of deer), of lions, of the *kagha* (unicorn), of the *sarabha*, of bears, of the *vijaggā* (a description of tiger), of monkeys, serpents, cats, owls, buffaloes, the *pasādā*, horses, elephants; and with terrific unnatural faces of men, demons and spirits, continued rushing towards the spot on which the Bódhisatto was seated at the foot of the *Bodhi* tree; and surrounding him, halted waiting for the order of MA'no.

"On this army of MA'no congregating around the terrace of the *Bodhi* tree, it was impossible for SAKKO and the other *dévo* (before mentioned) to retain their stations; and wherever they met (the *dévo*) gave way and fled. SAKKO, the king of *dévo*, slinging his *wijayutta* chank across his shoulders, and departing, stationed himself on the edge of the orifice of the *Chakkavāḍān*. MAHA' BRAHMA' depositing his white *chhatta* on the confines of the *Chakkavāḍān*, fled to *Brahmaloka* itself. KA'LO, the king of the *Nāga*, abandoning his whole train of dancers and singers, and diving into the earth, and repairing to the *Mangirika Nāga* realms, five hundred *yojanā* in extent, laid himself down, concealing his face with his hands. Not a single *dévo* could retain his position there (at the *Bodhi* tree).

"The great mortal, as if he were MAHA' BRAHMA' himself, alone retained his station, in that deserted position. Thereupon, in the first place, apparitions of ill omen in various forms descended, yelling, 'now MA'no will come.' At the instant of the conflict of the patron of the three worlds, (Bódhisatto) with the patron of procrastinators (MA'no) a thousand appalling meteors descended; and clouds and darkness prevailed. Even this unconscious (earth) together with the oceans and mountains, it contains, quaked, as if it were conscious—like unto a fondly loving girl who is forcibly separated from her mate—like unto the festooned vine quivering under

the action of a breeze. The ocean rose under the vibration of this earthquake : rivers flowed back towards their sources : peaks of lofty mountains, against which countless trees had beat (for ages), crumbling rolled to the earth : a fierce storm howled all around and the crashing concussion became terrific. The sun enveloped itself in awful darkness, and a host of *Kéwandé* (headless spirits) filled the air. In this manner was MA'no at the moment of his onset, attended by a host of the apparitional spirits of ill omens who haunt the earth and the air, in various forms—a frightful and dismaying exhibition.

“ The host of *déwá* on perceiving that he (MA'no) was designing to destroy the *déwa* of *déwá* (Bódhisatto), surrounded by all the celestial beauties, shouted out in tribulation ha! ha! The illustrious (Bódhisatto) indefatigable and fearless, retained his position in the midst of the host of MA'no, as if he were a *gurulo* amidst birds, and the dauntless lion amidst animals.

“ Thereafter MA'no saying to himself, ‘ terrifying SIDDHATTO, let me chase him away,’ and yet failing in his endeavours to repulse him with the nine descriptions of rains, viz., with the rain of storms, the rain of weapons, the rain of stones, and subsequently with the rain of fire, of burning ashes, of sand, of mud and of darkness and with the ordinary rains, furious with rage, he thus addressed his host : ‘ Fellows! why are ye standing still; make this SIDDHA'TTO an *Asiddhátto* : seize him, kill him, cut him up, bind him, release him not, drive him hence.’ Having given this order to this army, MA'no himself, mounting his charger, *Girimikkhale*, and hurling his javelin approached the Bódhisatto and said, ‘ SIDDHA'TTO, rise from thy seat.’ The retinue also of MA'no (attempted to) injure the great mortal. The great mortal however, by the power of the merits of his *Páramitá*, resulting from his forbearance, his benevolence, his perseverance, and his wisdom, overcoming the efforts of MA'no, as well as of his host; and during the first *yéma**, in due course, attaining the *Pubbhewasānanan* gift (the gift of knowing the past), during the middle *yéma* acquiring the *Dibbaccakkhū* (divination), and at the dawn of day arriving at the *Pachchagákkārenānan* which are the attributes of all the Buddhá; and realizing the (fourth or) *Chatutthajñānam*, by means of the *Anāpānan* (meditation or respiration), duly meditating on each part thereof, separately. And glorifying the *Wipassanan* sanctification (he had realized) he overcame the power of every evil passion, by pursuing in due course the *Maggó* which leads to the fourth *Maggó*; and having thus attained in perfection the virtues (inherent in) all the Buddhá, he chanted forth the hymn, which is the established thanksgiving of all the Buddhá (on the achievement of Buddhahood).

Anékañjali sanādrañ sanādhavissañ añibbisañ,

Gahakārakan gawisanto dukkhajāti punappunak.

Gahakāraka ! dīthhesi ; punagēhan nē kāhasi :

Sabba té phāsakā bhaggé gahakūtan wisankhītan

Wisankhāra-gatan chittan tanhānan khayamajjagé.

“ ‘ Performing my pilgrimage through the (*sanādra*) eternity of countless existences, in sorrow have I unremittingly sought in vain, the artificer of the abode (of the passions), i. e. the human frame. Now, O artificer! thou art found. Henceforth no receptacle of sin shalt thou form, thy frames (literally ribs) broken, thy ridge pole shattered. The soul (or mind) emancipated from liability to regeneration (by transmigration), has annihilated the dominion of the passions.’

“ Unto the Bhagawá who was still seated, after chanting this hymn of joy, this reflection occurred. ‘ It is on account of (the accession to) this throne of glory

* The night is divided into three *yémas* of ten hours each, each hour being equal to 36 European minutes, a *yéma* is equal to four European hours.

that I devoted myself to a pilgrimage of four *asankheyyāni* and a hundred thousand *kappe*. Let this be to me the throne of exertion as well as of joy. Unto me who am seated here, all my aspirations have not yet been accomplished : let me not therefore yet rise from hence.' He continued therefore seated there for seven days realizing innumerable lakhs of *kotiyo* of *samāpattiyo*.

" Thereupon certain of the *déwātā* began to entertain a doubt (regarding him) ; and said ' even unto this day most assuredly there is still something more to be accomplished by SIDDHA'TTO : his passion for the throne appears insuperable.'

" The *satthā* on perceiving this doubt of the *déwātā* ; for the purpose of dispelling their scepticism, rising aloft into the air manifested a miracle of two opposite results. Having by this manifestation dispelled the incredulity of the *déwātā*, descending a little to the eastward of the north of the throne, he passed seven days more gazing on the throne with (*animisā*) unclosed eyes ;—repeating, ' it was on this throne that omniscience was achieved : it was on this spot that the fruits of the pilgrimages performed through four *asankheyyāni* and one lakh of years have been realized.' That spot became known by the name of the *Animisā-chétiyo*. Then between the throne and the spot where he stood, having caused a *chankaman* (a walk) to be produced, he passed seven days more walking (to and fro) on that long *Ratana-chankaman* and that spot became known as the *Ratana chétiyo*. During the fourth week the *déwātā* miraculously called into existence a *Ratanaghara* (golden habitation) on a spot to the north-west of the *Bodhi* tree. There seated on a throne he passed seven days, meditating on the *Abhidhammopīṭako* ; and that spot acquired the name of *Ratanaghara chétiyo*.

" In this manner having passed four weeks at the foot of the *Bodhi* tree in the fifth week (departing) from the *Bodhi* tree he repaired to the shepherd's *Nigrodha* tree (*Ficus Indica*). There also meditating on *dharmmo*, he stationed himself enjoying heavenly beatitude. Having tarried there for seven days, he repaired to the *Machhindro* tree (*stravadi*). There for the purpose of being protected from a thunderstorm, having been encircled seven times by *Muchalindo* the *rāja* of serpents, as if he were reposing in a dormitory remote from all disturbance, he enjoyed heavenly beatitude. Having passed a week there, he repaired to the *Rajayatana* tree (*Buchanania latifolia*). There also he tarried enjoying heavenly beatitude. Seven weeks were thus passed. During that period BHAGAWA' neither washed his face, performed any corporeal function, nor partook of any food : he supported himself entirely by his miraculous attributes.

" Thereafter, after the termination of the seventh week, on the forty-ninth day, having washed his face, and cleansed his teeth with the teeth cleansers made of the *ndgalatā* cresser, and with the water brought from the *Anotatto* lake (in the *Hindlayan* country) by SAKKO, the king of *déwā*—the *satthā* continued to tarry there at the foot of the *Rajayatana* tree.

" During that interval, two traders, named TAPASSO and BHALLIKO, having been impelled thereto by a *déwātā*, to whom they were related, exerted themselves to make a meal offering to the *satthā* ; and taking with them some parched rice and honey, and approaching the *satthā*, said ' BHAGAWA' ! out of compassion, vouchsafe to accept this repast ;' and stood by him. As the refectation dish which had formerly been presented to him by the *déwā* had vanished on the day in which he first accepted the milk-rice which had been offered to him (by SIYA'TA' on the day he attained Buddhohood) BHAGAWA' thus meditated : ' The *Tathāgātā* are not permitted to receive any thing with their hands ; into what vessel can I receive this offering ?'

" Thereupon on discovering that wish of the BHAGAWA', from the four quarters, the four kings (of the *déwā*) brought four refectation dishes made of sapphires. BHA-

SAWA' rejected them. Subsequently they brought four dishes made of a stone of the color of the *mugge* seed. BHAGAWA', out of compassion for the four *dēvā*, accepting the same, and converting them into one dish, received the repast into that precious stone-dish; and partaking thereof conferred his blessing on them. Those two traders who were brothers, accepting Buddhho, *dhammo* and *sarano* (Buddho, his doctrines and his salvation) became two *upāsakā*.

"Thereafter the *sattā* repairing to the shepherd's *Nigrodho* tree tarried there. To him who had that instant taken his seat there, and who was fully impressed with the deep importance of the *dhammo* which he was destined to establish—a misgiving, common to all the *Buddhā*, arose—producing this exclamation 'alas! that this *dhammo* should devolve on me to be established, &c.' Influenced by that reluctance he formed the resolution not to be instrumental in propounding the *dhammo* to others. Thereupon, the great *Brahmā Sahasapati*, assembling from the ten thousand *Chakkawalinī*, the *Sakkā*, the *Suyāma*, *Santusitā*, *Nimmanaratiṇo*, *Paranimmittā*, *Wasawattino* and the great *Brahmāno* said to them—'Beloved! most assuredly the world is about to perish'—and repairing to the *sattā* supplicated of him to propound the *dhammo*—saying, as given in the text 'Lord! Bhagawā, vouchsafe to propound the *dhammo*.'

"The *sattā* according to his prayer thus meditated: 'To whom shall I first propound the *dhammo*.' Being aware, that ALA'RAKALA'MO and UDAKA'RA MO (before mentioned) were both dead; and, in reference to the aid afforded to him by the five *bhikkhus* formerly, saying, 'the five *bhikkhus* afforded to me the greatest assistance—where do they reside now?' and finding that they dwelt at *Migaddāyo** in *Bārānasi*, he added—'repairing thither let me there proclaim the supremacy of *dhamma*.'

"Having continued a few days longer in the neighbourhood of the *Bodhi* tree, receiving alms as a pilgrim;—on the full moon day of the month of *A'saḥi* (April, May, B. C. 588) saying: 'Let me repair to *Bārānasi*; and taking his dish and his robes, he performed a journey of eighteen *yojanā*. On the road, meeting an (*affawako*) individual named UPAKO, travelling on his own affairs, he imparted to him his having attained Buddhohood; and on the evening of the same day he reached the *Isipatana*† *Bārānasi*.

"The five *bhikkhus* recognizing *Tathāgato*, who was approaching, from a distance, said, (one to another,) 'friend! this is Go'tomo, the *sumano* (the priest): having indulged largely in good things, and recovered his stoutness of person, acuteness of his senses, as well as brilliancy of complexion, he is coming (hither);' and they came to this resolution: 'We will not bow down, nor render any other mark of respect to him—we will only prepare a seat for him.' BHAGAWA' divining their design, restraining the expansion of that universal benevolence which without distinction would have been extended over all mankind, manifested his benevolence exclusively (towards these five *bhikkhus*). They feeling themselves, under the influence of his benign spirit, became incapable, on the approach of *Tathāgato* of carrying their resolve into effect; and bowing down rendered him every mark of reverence.

"Thereupon, announcing to them his own attainment of Buddhohood, and taking his seat on the pre-eminent throne prepared for Buddhho, and while the asterism of *Uttarasāḥi* still predominated, surrounded by the eighteen *kotiyo* of (celestial) *Brahmano*, BHAGAWA' assembled the five *īherā* (above mentioned); and expounded to them the *Dhammachakkapavattana*‡ (a discourse on the supremacy of *dhammo*). Of these *Kondanno* (subsequently designated *Anṇakondanno Kondanno*, the instructed) acquir-

* *Migaddāyo*, a place set aside for deer.

† *Isipatana*, an edifice for the accommodation of the *Isi* (saints or devotees) situated near *Bārānasi* in the midst of the above mentioned deer haunt.

‡ Discourse in the *Samyuttanikāyo*.

ing a perfect knowledge of the same in the sense set forth in the sermon, attained together with the eighteen *kōṭṭiyo* of Brahmanas the *sotapatti*^o sanctification.

"In regard to this circumstance, it has been said (by Buddhho himself) :—

"I, Goṭṭomo, of the Sākya dynasty, who had attained omniscience, having accomplished my destiny, have achieved supreme Buddhohood, and at the prayer of Brahmas I have proclaimed the supremacy of *dhammo*; and unto eighteen *kōṭṭiyo* (of beings) the first stage of sanctification has been vouchsafed."

"Upon a subsequent occasion on his propounding the *Buddhawanso* at *Kapilawattlu*, having discoursed on things passed, in describing the subsequent sanctification, BHAGAWA' has said: 'Subsequently, while I was preaching in an assembly of men and *dēvā*, a number of beings exceeding computation, attained the second sanctification.'

"In this instance instead of speaking in the future tense, as the second sanctification had not yet been obtained, he spoke in the passed tense, and was enabled to substitute the past for the future (by his power of inspiration). In future instances we also must place the same construction on his discourses.

"And again on the occasion of his propounding the *Rōḥulavāḍḍa sutta*, he administered unto human beings whose number exceeded all computation, the sanctification of the beverage of heaven, which was the third sanctification.

"In regard to which Buddhho himself has said in propounding the *Buddhawanso*. 'In this very place I will offer admonition to my son whereby innumerable living creatures may obtain the third sanctification.'

"BHAGAWA' (during his own ministry) had but one general convocation of his disciples; that convocation consisted of the three *Kēśapa*, of whom UṆEWELLO was the chief†, and of (their fraternity of) a thousand *Jatila*, of the two *Aggassanaka*‡ (chief disciples of Buddhho), and of their paternity of two hundred and fifty. Thus it was a congregation of twelve hundred and fifty. Buddhho himself has said (in the *Buddhawanso*, 'There has been but one convocation of my sanctified disciples; that congregation consisted of twelve hundred and fifty.'

"BHAGAWA' taking his place in the midst of this assembly (held in the *Wāṇṇase* edifice at *Rajagaha* in the first year of his Buddhohood) and at the hour rendered appropriate by the four requisite conjunctions, propounded the *Patimokkha*. Thereafter he explained his own designs in these words. 'I who have become exalted and purified from sins in the midst of this congregation of *bhikkhus*, bestow upon thee, the whole of the fruits resulting from the realization of my vows, which is like unto the jewels which realizes every wish. Let me also, out of compassion to those who both seek the reward (of *nibbāna*) and eschew the vices inherent in *saṁsa* (the eternity of transmigratory existence) demonstrate the *catvāṁśachāra* (four sublime truths)."

After some verbal commentary the *Aṭṭhakāṭha* proceeds to make the following quotations from the *Buddhawanso* of SĀKYA'S own words.

"*Kapilawattlu* is my native city. The *rāja* SUDDHODANO is my father; and the mother who bore me is called MA'YA'. Until my twenty-ninth year, I led the life of a layman, having three palaces called *Rāmo*, *Surāmo* and *Sabho*. I had an establishment of forty thousand accomplished women. BUDDHAKACHANA (YOSODORA) was my consort, and RAḤULO was my son. On witnessing the four predictive indications, I departed on horseback. During the six years, I was undergoing my

* "*Sota*" is a rushing torrent, "and *patti*" "arrival at the first stage of sanctification," the attainment of which inevitably leads to *nibbāna*.

† The others were GAYA' KA'SSAPO and NADI KA'SSAPO.

‡ SA'RIPUTTO and MOGGALA'NO.

§ Analogous to the infatuation regarding the philosopher's stone.

probation, I endured severe trials. I am Gotomo' Buddhho the saviour of living beings. By me the supremacy of *dhammo* was proclaimed at *Isipattan* (in *Bérānāsi* the capital) of the king BRAHMADATTO. KA'LITO* and UPATISSO† are my two chief disciples; and A'NANDO is my (Upatāko) confidential disciple who always lived with me. KHE'MA and UPPALALAWANNA were my two chief priestesses. CHITTO and HATTA'LAUAKO were my principal attendants among male lay ascetics. NANDAMA'TA' and UTTARA' were my principal attendants among female lay ascetics. I attained supreme Buddhohood at the foot of the *Assattha* tree. The glory (around my head) casts its effulgence sixteen cubits high, and the term of my existence is designed to be one hundred‡ years. In the course of that existence I am destined to save multitudes; and for the guidance of posterity having established *dhammo* as a beacon, I shall also, at no distant period, together with my sacerdotal fraternity in this very world, attain *nibbāna*, like fire extinguished by the exhaustion of fuel.'

"Having in this manner expounded the whole of the *Buddhawanso*, explanatory of the *Kappé*, of the names (of persons and places), of the genealogies and other particulars, perambulating on the *Ratanachankamo*, which he had created at *Kapilawattū*; and having received the reverential obeisance of his relations, descending from the air (on which the *Ratanachankamo* was poised), BHAGAWA' took his seat on the pre-eminent Buddhho's throne which had been prepared for him.

"On BHAGAWA', the saviour, having thus seated himself, his assembled relations relieved from their (previous) distress, with perfect unanimity seated themselves also around him. Thereupon a *Pokkhara* shower descended, which was instantly absorbed through the fissures of the earth. Those who wished to get wet, did get wet. Those who did not wish to get wet, did not receive a drop of rain. On beholding this, surprised by the miracle and wonder, they exclaimed 'Lo! what miracle, what wonder!' On hearing this exclamation, TATHAGATO observed, 'It is not only now, on the occasion of my relations being assembled that a *Pokkhara* shower has fallen; it has so rained in aforetime also.' Making that subject his text, he preached the *Wessantarajātako*||; and it produced its effect. BHAGAWA' then rising from his pulpit retired to his *Wihāro*.

"Be it understood, that the eighteen *gāthā* commencing with the words '*apari-méyyé ito kappé, chaturo dāsinu nāyakké*,' (at a period incalculably remote from this *kappo*, there were four Buddhā) are *gāthā* composed by those who held the convocation¶. All the information contained in the rest of the *gāthā* (of the *Buddhawanso*) needs no commentary.

"Thus is closed the *Madhura atthawildsiniyā Buddhawansatthakathā* being a commentary on the *Gotomo Buddhawanso*, the history of the twenty-fifth Buddhho."

N. B. The distance from which I communicate with you deprives me of the privilege of correcting the press. It is not my intention to trouble you with a list of *errata*, but there is one error, produced by my own carelessness in giving to my clerk an inaccurate genealogical table to extract from, which I must be permitted to rectify, as it materially affects the question under investigation, page 715, vol. 6, for "paternal grandson" read "son." In page 51, of the Introduction to the *Mahawanso*, it is explained how this error was committed.

* Subsequently called MOGGALANO. † SARIFUTTO.

‡ All Buddhā are released from existence before the period of extreme old age in their respective terms of existence.

§ Being of a royal and reigning family they had remonstrated as already explained, with BUDDHO, on his leading the life of a mendicant pilgrim, instead of being respectably maintained by them.

|| A discourse in the *Jātakan*, a section of the *Suttapitako* narrative of BUDDHO's incarnation in the character of *Wessantaro rāja*.

¶ This occurred at the first convocation held after SA'KYA's death.

VI.—*Table of Mortality for ages from birth to twenty years, framed from the Registers of the Lower Orphan School, Calcutta.* By H. T. PRINSEP, Esq.

In the article published by me in the Journal of the Asiatic Society for the month of May 1837, I pointed out the facility with which the principle of computation applied therein to the casualties of the Bengal Civil Service, might be extended to any fixed and continuous body, provided only there was a register kept of the age at which each individual came to belong to it, and of the casualties with the date of the occurrence of each, or if the life was lost to the registers, through retirement, discharge, or other similar contingency, of the date of such removal from the books.

I advised the formation of books, arranged for each age of life, for registering the casualties amongst considerable numbers of each grade of the population of India, in order that tables might be framed therefrom for the valuation of native life, so as eventually to extend to this class the benefits of life assurance in all its branches.

I beg through the pages of the Journal again to point attention to this object, and as a first fruit of the wide field of statistical inquiry which lies open in this direction, requiring only a little labour to yield a rich crop of useful results, I now present to the public a table of mortality for children and young persons, from birth to twenty years, of age, framed from the registers of the Lower Orphan School of Calcutta, upon the principle before explained and inculcated.

I am indebted to Dr. STEWART, late Secretary of the Statistical Committee of the Asiatic Society, for the materials from which the table has been prepared. This gentleman, being connected with the Military Orphan School, found that a series of registers had been kept, and were forthcoming from 1798, of every boy and girl who had been admitted to that institution. The books were made up annually, and the boys or girls' names being entered alphabetically at the beginning of the year, twelve columns were ruled down the page, and any casualty by death was entered with its date in the column of the proper month. In like manner at the foot of the list of boys and girls in the institution on the 1st January, the fresh entries in the course of the year were recorded, with notice of the age of each new comer, and the date of his admission appeared in the column for the month when it took place.

Upon the first view of these registers, I at once perceived that they afforded the materials for a computation of the mortality amongst the inmates of the Orphan School, upon the principle applied to the Civil

Service of Bengal, and needed only to be re-cast and added up to yield equally valuable results for the ages of life they comprehended. The re-casting of thirty-eight years' registers containing many thousand names, has however proved a work of labour that has occupied several months. The Statistical Committee has furnished a writer, who has been employed on the work for this period without intermission, and the product of his labour in the volumes which show the name of every child, the date of his admission, and the manner of his having been disposed of, are deposited in the library of the Asiatic Society, as well for the verification of the table now submitted to the public, as that the detailed registers may be available for the ascertainment of other results which also may be gathered from them*.

My present purpose, as above stated, is confined to the exhibition in a tabular form of the ratio of mortality for each year of existence as deduced from these registers.

It will be satisfactory to explain in the first instance the process followed in the construction of the table; for there are several circumstances requiring to be noted, as guides to those who may apply the same principle of computation to other classes of persons, or may undertake the recasting of other similar registers.

Firstly. The Orphan School books did not show in every instance the actual date of birth, nor, if they had done so, would it have been advisable to attempt to follow each child from birth-day to birth-day, and so frame a general register, true to the exact age of each individual. For example, a child admitted is simply entered as aged not one complete year; in the re-cast of the registers this child stands as entered of the age 0, and he is considered as remaining of that age until the 1st January next following, though his birth-day, that is the date on which he completed one year, may happen to have been in November, or in February, or in any other of the twelve months following the date of his admission. All subsequent years of life are in like manner computed by the calendar year, from 1st January to 31st December, without reference to birth-days, which, as the error will be equal both ways, and so balance itself, affords a complete result for our present purpose.

Secondly. It is the object in the construction of this table, to deduce correctly in the first instance the annual percentage mortality. The admissions in the course of a year do not give the risk of those lives for the whole year. If for instance all admitted at 0 year of age

* NOTE.—Amongst other purposes to which these registers may be applied is the ascertainment of the relative mortality in different periods of years, and in different months and seasons.

had entered on the 1st December, there would have been the risk of only one month in their case, and the number of casualties upon the number admitted would have been one-twelfth only of the annual ratio. To provide accurately for this I furnished the writer, employed in recasting the registers, with a table giving a decimal value for every day of the year, and thence, according to the date of admission, I made him enter the risk, as of the fraction for the period of the year remaining to 31st December. Thus, in the re-cast of the registers, each admission will be seen indicated by a fraction to three places of decimals: and the number of risks is by addition of the whole brought to the true annual sum for computation of the ratio of mortality from the actual casualties.

Thirdly. When a life lapsed, its risk was lost for the remainder of the year. To provide for this, I made a reversed decimal table showing the fraction of the year to the date of the casualty, and by entering the lapsed life not as an entire year's risk, but according to the fraction to the date of occurrence, effectually removed this source of error. But those who follow this plan must be careful, when a life lapses in the very year of admission, to take both fractions from the same table for computation of the value of the risk: otherwise a child admitted on the 2nd January and dying on the 30th December, would have the same fraction to represent both dates, and would stand as 0, though the risk of his life was an entire year, less only two days. The writer employed in re-casting the Orphan School registers made this mistake in the first instance, which is the reason of my noticing the point.

Fourthly. Having thus settled the mode of entering admissions and casualties, I caused books to be prepared for each year of life. In that for age 0, I caused to be entered successively, all who were admitted at an age less than one year, taking their names in succession from the register of each year from 1798 to the present time. The number of names thus entered in this book for age 0, is 5930, but each being reduced to its fraction of the year of admission, and the death cases being doubly reduced, the number of annual risks, for this age is diminished to less than half, being 2646, which is what might have been expected. The names of the whole being thus looked out in the successive books, and entered in a fresh register for age 0, the page was ruled for forty years of life from 0, and each name was marked as a year of life in the columns following 0, as it was found in the successive registers, until the date of decease, or of removal from the institution.

Fifthly. The book of those who entered at an age less than one year being completed, and the individuals followed out, a similar book

was made up for those who entered at an age between one and two, and so for each year in succession. The pages of all were then separately summed up, and the aggregate of the books for 0 age being placed at the top of the page of a general abstract, the aggregates of the books of other ages were arranged in order so that the columns for age should correspond, and the whole be added up for the general result. This general abstract is amongst the papers deposited in the library of the Asiatic Society.

Sixthly. It will be evident that tables framed on this principle must be quite perfect, if only the registers on which they are framed be complete; but I am compelled to acknowledge that this is not the case with those with which I have had to deal. In the first place the registers of three years 1802, 1804 and 1805, are altogether wanting. The deaths of these years are therefore not all counted. I have traced in the casualty book, thirteen deaths for 1802, nine for 1804, and four for 1805, which have been duly entered, but this cannot be all. On the other hand if the children's names were found in the register of 1801, and again in 1803, and afterwards in 1806, they have been entered as giving the risk of their life for the whole consecutive period. The effect therefore is to increase the number of risks and diminish the ratio of mortality. This error has no influence on the ratio for year 0, and less of course on that for age one year, than for the advanced ages, because the risks of column 0, are all fresh admissions, which are likewise lost for these three years, and a large proportion of the risks of age one are of and the same description. The number of names lost to the tables, in the years of these missing registers, that is, which appear in the book of 1801 but not in 1803, or in 1803 but not again in 1806 is 238, of which a large proportion will probably have been deaths, and the rest removals from the institution during the period. I might have provided for the error occasioned by the want of these registers by excluding all the risks of the three missing years, but have preferred to leave them; partly because of the deaths found in the casualty register which have been entered, and partly because of another source of error, which as it operated the other way required something to counterbalance it.

In re-casting the registers, which as I have mentioned were framed originally by the year, I have not found that all the names of each register can be accurately traced. On the contrary in the 35 years' books, there are no less than 830 names lost, without notice of the cause of their being omitted in subsequent registers. This certainly is a large number. A considerable proportion of them may be ascribable to the children changing their names, and many to their being taken

away from the institution without formal order, when the removal not being settled and recorded at the time, the date and particulars have slipped from notice. Out of the 890, however, there will assuredly have been some errors from carelessness, occasioning omissions of at least fractional risks of life: on the other hand every death being a formal thing, attended with ceremonies and expenses, it is not likely that such a casualty should have escaped entry. The omissions therefore will have operated to reduce the proportion of risks to the deaths, and so to balance the effect of the want of the three years' books. I might have been less inclined to adopt the conclusion that these omissions had operated to diminish the risks, if I had not found that the rates of mortality produced by the computation, as made excluding them, were extremely high for all the ages comprehended in the table, so high in comparison with the most approved tables of Europe, as to prevent suspicion that there is error from understating the deaths. I am obliged however to confess, that in consequence of the want of the means of tracing these 890 names, my table framed from the results of the Orphan School of Calcutta, is only an approximation, instead of being based on perfect data.

Seventhly. When preparing the first general abstract of the results of these registers, it occurred to me rather as an object of curiosity than with any hope of finding matter of separate interest, to direct the boys and girls to be stated separately for every fifth year. But on obtaining the first rough abstract so drawn out, I found so great a difference in the ratio of mortality amongst the boys for the years beyond the sixth, that I determined to sift the matter through the results of each year. The consequence is, that my present general abstract is on a roll six feet long, much too large to be printed in the Journal. It must therefore lie for inspection, with the books in detail upon the table of the Asiatic Society's library. The table computed from it will be exhibited in a much more compendious form.

Eighthly. It is necessary to observe that for the purpose of showing the mortality separately amongst the boys and girls, and the number of each upon which the casualties occurred, the number living on the 31st December of the year for each age is stated in the column, and the deaths are those that occurred in the year ending on that date, that is, not in any given 12 months, but amongst the children who gave the year of life then brought to a close. To compute from these data the ratio of mortality on the boys and girls respectively, the following calculation has been adopted. For age 0, the boys that reached the 31st December, following the date of their admission, were 2719, and 243 died before that date. As all these were births or admissions,

Mortality of the Orphan School computed on 1,00,000 lives, and compared with the decrement of European tables.

| Years of age. | Calcutta Orphan School. | | Northampton. | Carlisle. | London Bills from Pall. Transactions. | Halley's Breslau table. | | Dr. Price's calculation from London bills of mortality. |
|---------------|-------------------------|--------------|--------------|-----------|---------------------------------------|-------------------------|--------|---|
| | General table. | Girls table. | | | | | | |
| 0 | 1,00,000 | 17,044 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 14,500 | 1,00,000 |
| 1 | 82,956 | 15,838 | 74,249 | 84,610 | 82,699 | 85,300 | 5,700 | 68,305 |
| 2 | 67,118 | 15,803 | 62,815 | 77,790 | 72,206 | 79,800 | 3,800 | 57,396 |
| 3 | 61,769 | 15,178 | 58,205 | 72,740 | 67,746 | 75,000 | 2,800 | 52,213 |
| 4 | 58,808 | 2,493 | 55,330 | 69,980 | 64,598 | 72,200 | 2,800 | 49,008 |
| 5 | 56,839 | 2,612 | 53,639 | 67,970 | 62,356 | 71,000 | 1,800 | 45,804 |
| 6 | 54,774 | 1,765 | 51,060 | 65,760 | 60,887 | 69,200 | 1,200 | 43,452 |
| 7 | 53,234 | 1,540 | 50,658 | 65,940 | 59,942 | 68,000 | 1,000 | 42,338 |
| 8 | 51,971 | 1,376 | 49,914 | 65,360 | 59,217 | 67,000 | 900 | 41,502 |
| 9 | 50,595 | 1,372 | 49,327 | 64,930 | 58,688 | 66,100 | 800 | 41,042 |
| 10 | 50,002 | 1,372 | 48,812 | 64,600 | 58,247 | 65,300 | 700 | 40,887 |
| 11 | 48,847 | 1,555 | 48,366 | 64,310 | 57,868 | 64,600 | 600 | 40,182 |
| 12 | 47,861 | 1,602 | 47,937 | 64,000 | 57,535 | 64,000 | 500 | 39,877 |
| 13 | 47,249 | 1,691 | 47,508 | 63,680 | 57,212 | 63,400 | 400 | 39,322 |
| 14 | 46,568 | 1,800 | 47,079 | 63,350 | 56,894 | 62,800 | 300 | 38,767 |
| 15 | 46,268 | 1,871 | 46,650 | 63,020 | 56,579 | 62,200 | 200 | 38,312 |
| 16 | 46,887 | 1,960 | 46,221 | 62,690 | 56,262 | 61,600 | 100 | 37,857 |
| 17 | 44,737 | 1,994 | 45,776 | 62,360 | 55,945 | 61,000 | 100 | 37,402 |
| 18 | 43,743 | 1,046 | 45,349 | 62,030 | 55,628 | 60,400 | 100 | 36,947 |
| 19 | 42,697 | 1,008 | 44,922 | 61,700 | 55,311 | 59,800 | 100 | 36,492 |
| 20 | 42,307 | 1,073 | 44,495 | 61,370 | 55,000 | 59,200 | 100 | 36,037 |
| 20 | 41,824 | | 44,068 | 61,040 | 54,683 | 58,600 | | 35,582 |

It will be seen from this table, that the percentage of mortality is almost universally worse amongst the boys than the general average, and amongst the girls better. The only ages which are exceptions are 4 years, 6 years and 13. The last may be susceptible of some explanation, as it might be expected that the girls at that age should be more liable to disease than the boys, but not so the other two, in which the difference indeed is not very wide from equality, and may therefore be accidental.

The consecutive increased mortality amongst the boys will, however, require more careful notice.

In the first three years of life when both sexes receive equal care, the per centage difference is only as follows :

| Boys. | | | Girls. | | |
|------------|------------|------------------|------------|------------|------------------|
| Lives. | Deaths. | Per ct. per ann. | Lives. | Deaths. | Per ct. per ann. |
| 7775 | 1120 | 14.404 | 7842 | 1082 | 13.798 |

equal to a difference between the sexes of one in 24. In the second three years it increases, being

| Boys. | | | Girls. | | |
|------------|-----------|-----------|------------|-----------|-----------|
| Lives. | Deaths. | Per cent. | Lives. | Deaths. | Per cent. |
| 5656 | 237 | 4.190 | 5712 | 209 | 3.659 |

equal to a difference of nearly one in seven. In the next five years it becomes

| Boys. | | | Girls. | | |
|------------|-----------|-----------|------------|-----------|-----------|
| Lives. | Deaths. | Per cent. | Lives. | Deaths. | Per cent. |
| 6576 | 167 | 2.538 | 7284 | 146 | 2.004 |

or more than one quarter in excess for the boys ; and from the age of 11 to 15 it is as high as

| Boys. | | | Girls. | | |
|------------|----------|-----------|------------|----------|-----------|
| Lives. | Deaths. | Per cent. | Lives. | Deaths. | Per cent. |
| 1791 | 38 | 2.121 | 4613 | 54 | 1.170 |

or nearly double.

The number of boys becomes so small after the age of fifteen, that it is needless to pursue the comparison, but the deaths amongst 70 and 38 boys of the ages of 15 and 16 respectively being so high as 8.219, and 7.692 per cent., there is reason to believe that in respect to the youths of this sex after the age of 14, the institution is merely a hospital, the healthy boys being all apprenticed out, or otherwise disposed of, while the sickly remain, because they are unfit to enter the army as musicians, or to undertake any trade or profession.

But this circumstance, though it accounts for the large mortality amongst the remnant of boys after 14 and 15 years of age, will not account for the consecutive increased mortality on the large numbers

of the previous ages. I fancy the circumstance must be attributed in part to the greater exposure the boys suffer, and the harder living they are inured to, and in a great measure perhaps to the mortality known to have prevailed amongst the boys, when they were at the other school-house over the river, which was given up in consequence of its insalubrity.

For practical purposes, therefore, the ratio of mortality calculated from the deaths amongst the boys of the Orphan School institution, must be set aside as too unfavourable for an average. The girls' deaths for the same reason afford a better average than the general table, which includes both sexes; and, being more favourable, the results on the girls' lives correspond better with the results of the European tables, which I have collected for comparison.

I have not been able to lay hand upon any explanation in detail of the precise manner in which the Northampton and Carlisle tables were framed. I have great doubt, however, if, for the early ages especially, the results have been deduced from data, which can lay equal claim to accuracy, with those used for the table I now present to the public. The means may readily be forthcoming of ascertaining the number of deaths, which occur in a town or in any community, and the ages of the persons dying are of course entered on the burial registers, but it is by no means so easy to number a fluctuating population, and to register the ages of each individual, so as to get at the number of risks at each age, upon which the casualties by death have occurred. The great difference observable in the rates of decrement in the different tables of Europe seems to confirm the doubt, as to the correctness of this material of the calculations upon which they are based: and the results of the London bills of mortality, as given in Dr. YOUNG's article in the Philosophical Transactions, compared with Dr. PRICE's Table framed from the same bills, afford a further confirmation of the doubts entertained, in respect to the accuracy of any we yet possess. The only tables known to be constructed from perfect data, are those of the Equitable Life Insurance Office, but these are confined to lives of ages exceeding twenty years*. It will be seen that the London table of the Philosophical Transactions comes nearest to those framed upon the Orphan School registers as far as the age of six years, and after that age Dr. PRICE's table framed from the same

* The total number of Equitable lives between 10 and 20 is less than 1500 which is quite insufficient for an average upon those ages.

materials. The decrement in India is, as might be expected from the climate, greater from birth than in London, but the favourable years are the same, viz. from nine to fourteen, and there will be observed, with due allowance for insalubrity, and for not perhaps the most favourable rearing in a large school like our Orphan Asylum, that there is a general correspondence in the results up to the age of six. After that age the London decrement, in the first table given, is unaccountably small compared with ours, as well as when compared with that of Dr. PRICE, and is less than in many other European tables. I have seen in a recent publication the following statement of the mortality of the children brought up in the Blue Coat, or Christ Church School in London.

| | Lives. | Deaths per ann. |
|-------------------------|------------|-----------------|
| From 1814 to 1818 | 5130 | 51 |
| 1818 to 1823 | 5193 | 44 |
| 1824 to 1828 | 5412 | 40 |
| 1829 to 1833 | 5670 | 36 |

From this it would seem that the deaths in the early period were about one per cent. per annum, but are reduced to two-thirds per cent. in later years. Assuming the lives comprehended in the statement to be from seven years old to fifteen, we have from the girls' table of the Orphan School for the same ages the following result :

| Lives. | Annual Deaths. |
|--------------|----------------|
| 10,121 | 151 |

or one and a half (1.49) per cent. which is a double mortality for our Calcutta institution, as compared with that of the London school, at the most favourable period.

The general bills of mortality for London, as given in the Philosophical Transactions, show for the same age an average rate of decrement of 0.70 per cent.*, which would lead to the conclusion, that for those ages the table is not perfect : for it is not possible to conceive, that the general population of a city like London, including the half-starved ragged children of the penniless poor, are subject to fewer casualties by death, than the well-fed and well-clothed inmates of this richly endowed institution.

Dr. PRICE in his table calculated from the London bills of mortality, gives a ratio of deaths for this period of life uniformly exceeding one per cent., being in the aggregate, upon 102,190 risks, 1280 deaths, or one and a quarter per cent. per annum, which is borne out

* Lives, 5,22,172—Deaths, 3704.

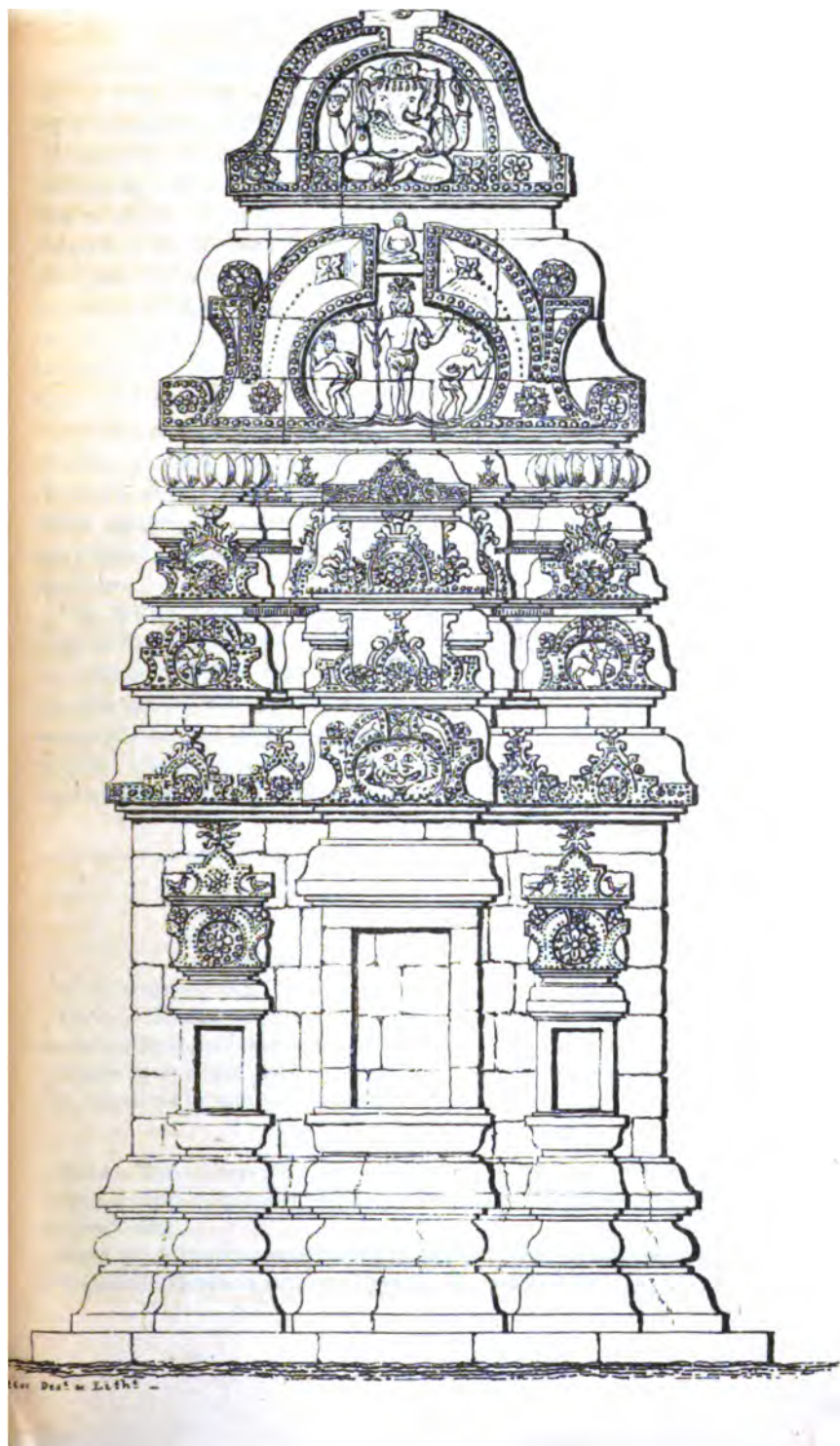
by the results of the Blue Coat school, and corresponds more nearly with the ratio deduced from our girls' table. Dr. PRICE's rate however for the first three years of life, and especially for the first year, is so much higher than that of any other table, as to make it probable, that he has adopted a different method of computing the early deaths. Perhaps also he has included the children still-born amongst the deaths of the age 0, whereas our table of course excludes these, and for the most part the additional risks of the first month after birth.

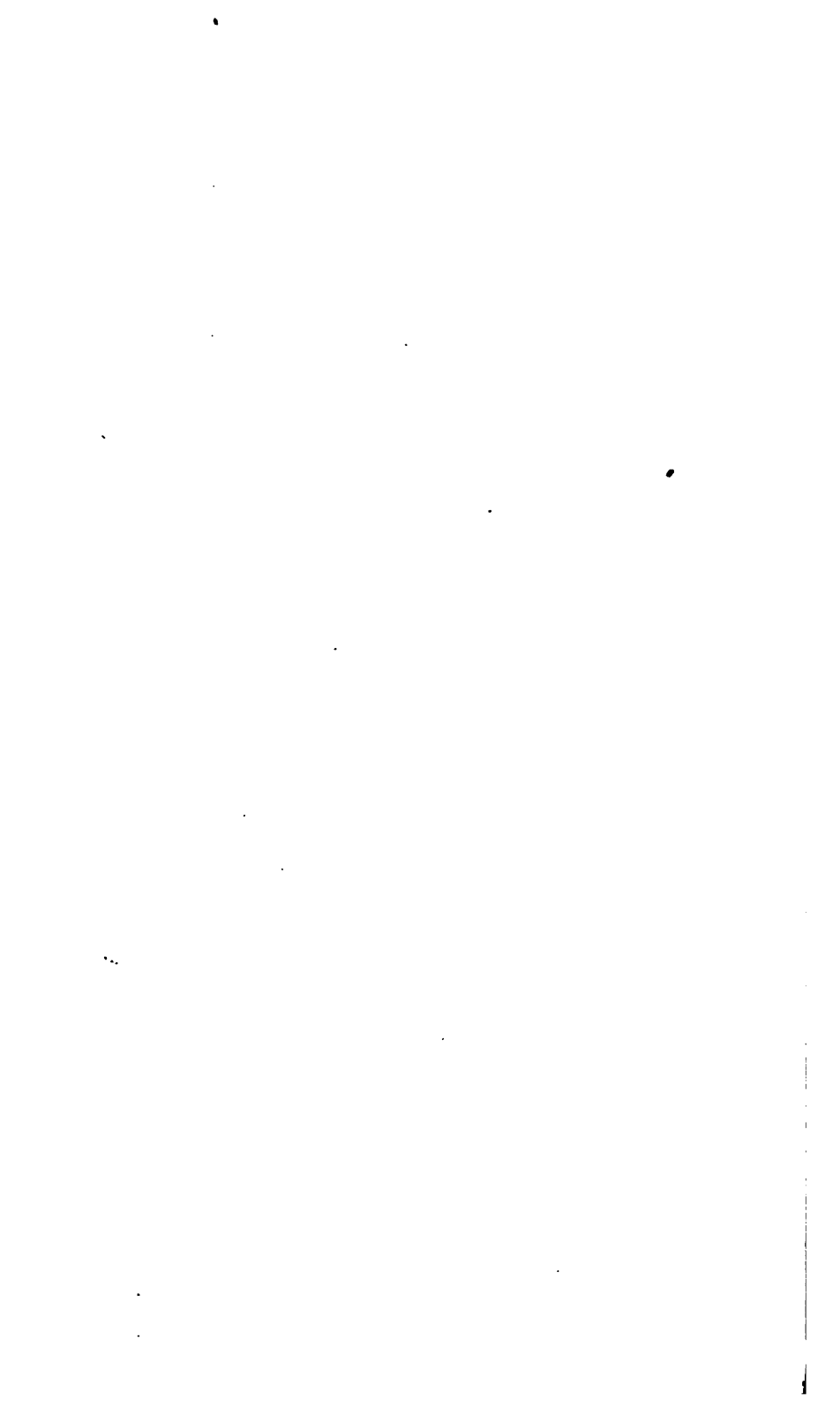
September, 1838.

VII.—*Sketch of the Temple to Durga at Badēsūr, &c. extracted from Lieut. KITTOE's Journal.*

Before reaching the small town of *Badēsūr* situated just beyond the *Mulakaí nullah*, there is at its debouchure an isolated hill with a modern temple to MAHÁDEVA on the top of it, built by a Mahratta lady; at the foot of this hill, on the southern face under some large tamarind trees, is a very curious and ancient temple to DURGA; it is in the same style with that of *Kundhūrpur*, and likewise unfinished; the plinth is buried in the sand; it is very small, about 6 feet wide, 9 long, and 14 high. The accompanying drawing represents the elevation on the south side, and will serve to illustrate this peculiar style, the large temples only differing in proportion, and in the increased number of compartments, but not in ornament; the idols are destroyed. *Vide Pl. XL.*

The small town of *Badēsūr* is certainly the neatest and most picturesque place I have seen; there is one long street which is very broad, having a row of small gardens up the centre of it with trellis work coverings, over which beans and other creeping esculents and flowering plants are trained, forming one continued bower; at intervals there are fantastic vases made of pottery in which the tulsi plant is cherished: some of these are very tastefully constructed. There are also several wells with terraces round them; the houses are all elevated on plinths with narrow ledges projecting beyond the walls; the thatches also project considerably so as to admit of the rain falling clear of all; these ledges serve for the people to sit on in the fine weather. There is a mart here for grain, iron, cotton, cloths, silk dhotis, ironmongery, &c. which are both manufactured and brought from the neighbouring places; the unwrought iron comes from *Ungool*; there is a ferry here and a direct road to *Nyahgūrh* and *Berhampur* in the *Madras Presidency*.





The hill of *Badenour* is a quarter of a mile beyond the town, at the foot of it, and on the east side are several small temples of antiquity, but destroyed by modern innovations : there is also a fine stone well.

I observed several idols executed in a very superior style in chlorite ; amongst them was a figure of BUDH erect, with the different Buddhas in the sitting posture encircling him, similar to that dug up at *Sarnath* by Lieutenant CUNNINGHAM ; it was besmeared with sendoor and ghee, the same as the other idols. I endeavoured to persuade a brahman, that he was guilty of heresy in thus worshipping BUDH ; he assured me that it was not BUDH, but MAHA'DEVA. So much for the knowledge of the people of *Oriassa*, for I have remarked the same wherever I have been.

We descended at this place into the bed of the river ; then after rounding the hill and passing the mouth of a large nullah called the *Kalágiri*, we re-ascended the bank and entered another extensive plain which continued uninterrupted till half a mile beyond where our camp was pitched at *Puddumbutte* : it also extends for several miles south of the river.

The hill of *Badenour* has a volcanic appearance and consists of a brick-red marl and masses of gravel, breccia, and decomposed granite. It is about 300 feet high and rises abruptly from the river, on the opposite side of which (to it) is another rock forming an island having an equally curious appearance ; there is a temple on it also, for all such singular places are looked upon as the abodes of some "thakoor" or form of the deity, and resorted to accordingly.

VIII.—*Proceedings of the Asiatic Society.*

Wednesday Evening the 10th October, 1838.

H. T. PRINSEP, Esq. Vice President, in the chair.

Lieut. J. DUNCAN, and Dr. HELPER, proposed at the last meeting, were unanimously elected members of the Society.

JAMES MIDDLETON, Esq. of the Hindu College, proposed by the Secretary, seconded by the Vice President.

Oriental Publications.

Read a letter from the Secretary of the Bombay Branch of the Royal Asiatic Society, acknowledging the receipt of the Arabic works published by the Society.

Read the following correspondence relative to the interchange of works of Oriental Literature with the Egyptian Government :

To J. PRINSEP, Esq., Secretary to the Asiatic Society, Calcutta.

SIR,

I am directed by the Right Honorable the Governor General to transmit to you, for submission to the Asiatic Society, the accompanying copies of papers relating to the interchange of works of Oriental Literature between India and Egypt, proposed by GUETANI BEY, a Spanish gentleman at the head of the Medical establishment at the latter place: and to convey the wish of His Lordship, that the Asiatic Society will be pleased to favor him with their opinion on the points indicated in my letter of the 18th instant, with a view to acknowledge in some measure, the handsome overture made by GUETANI BEY. In the meantime, Major FELIX has been requested to forward to your address the books, per list No. 1, which have been already received from Egypt, and are in his possession, excepting the "Biography of celebrated Philosophers by ABDULLA BIN HOOSSEN" which is herewith sent, advising you of the date and name of the vessel in which the books may be forwarded to Calcutta.

I have, &c.

Simla,
20th Aug. 1838. }

W. H. MACNAUGHTEN,
Secy. to the Govt. of India with the Govr. Genl.

To the Secretary to the Govt. of India in the General Department with the Governor General.

SIR,

I beg leave to state, that while at Lahore on my recent Mission, I received two letters from Major FELIX, private Secretary to the Governor of Bombay, dated June the 8th and July the 5th, the first forwarding a letter to my address dated Cairo, the 16th of April, from Col. DE HIZETA, who returned from India to Europe via Egypt last cold season, and from GUETANI BEY, a Spanish gentleman at the head of the Medical Establishment in Egypt, dated Alexandria, the 11th of May.

2. I have annexed extracts from Major FELIX's letters and from that of Col. DE HIZETA, together with a copy of GUETANI BEY's communication, and of the two lists which he has furnished of European works translated into Arabic. No. 1, is a list of the books actually sent to India by the BEY, and No. 2, is a list of the books translated, which the BEY expresses his willingness to send should a desire be expressed to have them.

3. The Governor General will observe, that my learned correspondent expresses his conviction that the Governments of Bombay and Calcutta, animated by the same desire of being useful, have published similar translations in different Oriental languages, and that an interchange of these works between India and Egypt would prove of the greatest utility, as well to the people who are under the beneficent rule of Great Britain, as to those who obey "the regenerator, MAHOMED ALI."

4. I am apprehensive, that, as regards translations on this side of India, we shall be able to make but a very poor return to Egypt for the valuable collection transmitted by GUETANI BEY. I would venture to suggest, that the Government of Bombay be requested to furnish a list of all works which have there been translated into the Oriental languages, and that I be authorized to forward a copy of this correspondence to the Secretary of the Asiatic Society at Calcutta, with a request, that that learned body be solicited to furnish their opinion, as to the most appropriate mode of acknowledging the handsome overture of GUETANI BEY, and as to whether it would be advisable, with reference to our inability to make a suitable return, to request a further supply of works according to the list No. 2. It occurs to me as being possible, that the Society may deem it proper to lay out a portion of the funds, which the Honorable the Court of Directors have recently placed at their disposal for the encouragement of Oriental Literature, in the purchase of some of the works published in Egypt, and thereby in some degree to aid the useful labors which are there being prosecuted.

5. I would further suggest, that I may be authorized to request Major FELIX to forward to the Secretary of the Asiatic Society at Calcutta, the works which have been already received in Bombay from Egypt.

6. One specimen of these works being the "Biography of celebrated Philosophers by ABDULLA BIN HOOSSEN," has been sent to me by Major FELIX. It is submitted herewith for the inspection of His Lordship. I have looked into this work here and there, and the style appears to me to be extremely perspicuous and good.

Stalk,
18th Aug. 1838. }

I have, &c.

(Signed) W. H. MACNAGHTEN.

*A Monsieur Le Chevalier, W. H. MACNAGHTEN,
Secrétaire du Gouvernement du département de Calcutta.*

MONSIEUR,

Grâces aux heureux évènements politiques qui ont décidé depuis quelque lustres des destinées des nations, la civilisation Européenne a pénétrée en orient et continue à y faire tous les jours de rapides et douces conquêtes sous l'influence de la propre convention dictée par l'exemple de nos mœurs, et les principes de notre impartiale justice.

La connaissance des ouvrages scientifiques les plus remarquables, issues des plumes des savans d'occident est sans nul doute le moyen le plus propre pour parvenir à un complet résultat.

L'Illustre et renommé M^HEMET ALY PACHA intimement persuadé de cette vérité en a fait traduire plusieurs en langue Arabe et continue sans relâche cette œuvre de philanthropie.

Je n'ignore pas que les gouvernemens éclairés de Bombay et de Calcutta animés du même esprit civilisateur ont fait publier des semblables traductions en diverses langues orientales.

Mon digne compatriote Mr. le Colonel de HEZETA, dont vous trouverez ci joint une lettre d'introduction m'aussi parlé à son passage par ce pays dont la manière la plus favorable, des efforts du gouvernement Anglais pour déraciner l'ignorance qui depuis tant de siècles a abruti les habitants de l'Inde. Nous avons pensé qu'un échange de ces ouvrages pourrait être de la plus grande utilité pour les peuples qui ont le bonheur de se trouver sous la bienfaisante domination de la Grande Bretagne, aussi bien que pour ceux qui obéissent à M^HEMET ALY le régénérateur. J'ai communiqué cette idée au Viceroi qui en a apprécié toute la valeur et les biens qui en pourront résulter. En conséquence j'ai l'honneur d'envoyer un exemplaire de tous les ouvrages scientifiques imprimés au Caire en langue Arabe par ordre de S. A. à l'usage des établissemens d'instruction, que je vous prie d'agréer comme témoignage de mon estime et considération.

Nous avons envoyé encore d'autres ouvrages traduits dont je joins ici la nôte. S'ils peuvent vous être agréables je me ferai un vrai plaisir de vous les adresser dès que j'en serai informé.

Agrez M. le Secrétaire l'hommage de ma considération la plus distinguée

*Le premier Medecin Chirurgien de S. A. A. V. Roi d'Egypte, &c. &c.
Alexandrie, le 11 Mai, 1838.*

(Signed) GAETANI BEY.

List of Arabic books.

- 2 Copies. A Treatise on military discipline.
- 2 " A work on medical science, by MAHOMED HURROWEE.
- 2 " Ditto on mineralogy, by REFUAH BUDWEE.
- 2 " Treatise on Geometry, by MAHOMED BOUMER.
- 2 " Ditto on anatomy, by MAHOMED HURROWEE, and SHEIK MAHOMED RUSHEEDEE.
- 2 " Ditto on Surgery, by MAHOMED HURROWEE.
- 2 " Ditto Medicines, ditto.
- 2 " Art of Judging of diseases, by ditto.
- 2 " Treatise on the preparation of Ointments, by MOOSTUFA HUSSON.
- 2 " Signs by which Domestic animals may be judged of, by ditto.
- 2 " Treatise on the cure of horses, by ditto.

- 2 Copies. Geographia, or work on geography, by REFUAN BUDWEH.
 2 „ Elements of Philosophy, by MAHOMED HURRAWEE.
 1 „ Biography of celebrated philosophers, by ABDULLA BIN HOSEIN.
 2 „ Treatise on the use and advantages of the several members of the body, by MAHOMED HURRAWEE.
 2 „ Explanation of uncommon terms; by REFUAN BUDWEH.

Ouvrages traduits in Arabe et imprimés.

- | | |
|--------------------------------|---------------------------------------|
| 1. Anatomie générale humaine. | 9. Pharmacie, id. |
| 2. Anatomie descriptive, id. | 10. Traité de l'extérieur du Cheval. |
| 3. Traité de chirurgie. | 11. Traité de Mineralogie. |
| 4. Physiologie. | 12. Géographie. |
| 5. Pathologie interne humaine. | 13. Vie des Philosophes. |
| 6. Hygiène. | 14. Géométrie descriptive. |
| 7. Traité de Pharmacie. | 15. L'Ecole du soldat et de Palestor. |
| 8. Anatomie Vétérinaire. | |

Ouvrages traduits en Arabe et sous presse.

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|------------------------------------|--------------------------------------|
| 16. Physique. | 18. Histoire du moyen-âge. |
| 17. Abrégé de l'histoire Ancienne. | 19. Traité de bandages et appareils. |

Ouvrages traduits et à imprimer.

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|---|--|
| 20. Traité de Botanique. | de la Géographie de Malte Brun (le traduction de cette ouvrage se continue.) |
| 21. Chimie d'Orfila. | 41. Guide du Juge militaire, |
| 22. Traité de Chimie. | 42. Traité de Mythologie. |
| 23. Traité des accouchemens. | 43. Progrès de la Civilisation en Europe. |
| 24. Manuel de l'accouchemens. | 44. Traité d'Agriculture. |
| 25. Physiologie de l'homme. | 45. De la culture du murier par Julien: |
| 26. Pharmacie pratique. | 46. Manuel des Sapeurs. |
| 27. Pharmacie végétale. | 47. Traité de Géométrie Militaire. |
| 28. Chimie pharmaceutique. | 48. Table des Logarithmes. |
| 29. Géographie physique. | 49. Vade mecum des medecins Vétérinaires. |
| 30. Géographie élémentaire. | 50. Formulaire Vétérinaire. |
| 31. Traité des Poisons par Orfila. | 51. Règlement sur le service médical Vétérinaire. |
| 32. Géométrie. | 52. Pathologie interne Vétérinaire. |
| 33. Arithmétique. | 53. Pathologie externe Vétérinaire. |
| 34. Algèbre. | 54. Matière médicale Vétérinaire. |
| 35. Traité de mécanique. | 55. Anatomie générale Vétérinaire. |
| 36. Histoire Moderne. | 56. Traité des Articulations. |
| 37. Logique de Dumarsais. | |
| 38. Histoire de Charles XII. | |
| 39. Elements et principes du droit naturel. | |
| 40. Les quatre premiers volumes | |

Ouvrages traduits en turc et imprimés.

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|--|---|
| 57. Réglemens sur les services intérieurs d'infanterie. | 64. Traité. |
| 58. Ordonnances sur les exercices et manœuvres d'infanterie. | 65. L'Art de la guerre. |
| 59. id. id. id. de Cavalerie. | 66. Géométrie de Legendre. |
| 60. id. id. id. d'Artillerie. | 67. Campagne de Napoléon en Italie. |
| 61. Réglemens sur la fabrication et des Armes. | 68. Histoire de Napoléon écrite par lui-même à Sainte Hélène. |
| 62. Services des officiers. | 69. Logique de Dumarsais. |
| 63. Règlement sur le service en Campagne. | 70. Histoire d'Alexandre le grand (sous presse.) |

Je prie, Mr. Le Secrétaire, d'envoyer une copie de cette Note à Calcutta.

(Signed) GANTANI BEY.

*Extracts of letters from Major FELIX and Col. J. DE HÉZETA.
From Major O. FELIX, dated 8th June, 1838.*

"I enclose a letter which came under cover to me from a Spanish gentleman who is now the head of Medical establishment in *Egypt*. He has also sent a great many books printed in *Cairo*, which are translations from European authors into Arabic; but, as I think it probable that you will desire them to be sent to Calcutta, I shall not forward the box till I hear from you.

"Of course the BEY explains his motives for opening this correspondence, but I am assured by Col. DE HÉZETA that he is a man of talent and consideration."

From Major O. FELIX, dated 5th July, 1838.

"I enclose two lists which GARTANI BEY "*Le premier medecin chirurgien de S. A. A. V. Roid' Egypte*," as he styles himself, has requested me to forward to you.

"No. 1, is a list of the books he has sent, and No. 2, a list of all that have been translated into Arabic at *Cairo*, and any, or all of which he will be happy to be allowed to present to you.

"I have packed the books named in list No. 1, and shall keep them till I hear from you."

From Col. DE HÉZETA, dated Cairo, 16th of April, 1838.

"You will readily excuse that I intrude on your valuable time, when you will see that my letter has for its object the promotion of education in India, by means of elementary and didactic works well translated in the vernacular languages. Travelling in this country I had the good fortune to meet my countrymen GARTANI BEY and CLOT BEY, the first, the favorite and personal physician to his Highness the PACHA, and the second the chief inspector of hospitals, and both the creators of a medical college not only of males, but also of females for the obstetric art. They have had the merit of overcoming by dint of perseverance and energy, and even at the risk of their lives, all the prejudices of the Moslems, and to see them dissect, and some have already performed on living subjects delicate cases of *lithotomy*. No sooner I heard of the great number of translations which they have caused to be made into Arabic of medical works which are already printed, I saw the great advantages which might result to India and *Egypt* from a mutual interchange of such works. My wishes have been met with alacrity on the part of these high-minded and learned individuals, and the consequence is the public letter which will accompany this. I have no doubt that Lord AUCKLAND and yourself will sympathize with him in philanthropy.

"What would your Education or School Committee have said if they had witnessed as I did four days ago a *polytechnical school*, which deserves completely its name and in which every branch of mathematical science is taught without the help of any European language?

"This, I acknowledge, is carrying the thing too far, for we ourselves cannot be thoroughly learned without the assistance of the classical languages. But I prefer even this, to making a distantly foreign language the vehicle of all elementary learning."

Mr. SUTHERLAND, Secretary, Committee P. Instruction, informed the Society that the essays intended to compete for Mr. MUIR's prize must be delivered in by the 15th March, 1839.

Library.

The following books were presented to the Asiatic Society:

The Philosophical Transactions of the Royal Society of London, for the years 1825-6-7—from the Royal Society.

The list of the members of the Royal Society for the 30th November, 1837.

Proceedings of the Royal Society, Nos. from 18 to 31, in the years 1834—1838.

Abstracts of the papers printed in the Philosophical Transactions of the Royal Society of London, from 1830 to 1837 inclusive, vols. 3. 1830 to 1837.

Address of his Royal Highness the Duke of Sussex, K. G. &c. &c. the President, read at the anniversary meeting of the Royal Society, on Thursday, November 30, 1837.

Address to Her Majesty referred to in the address of H. R. H. the President of the Royal Society.

Defence of the resolution for omitting Mr. PANNIZZI's Bibliographical notes from the Catalogue of the Royal Society.

The Sixth Report of the British Association for the advancement of science, vol. 5—*presented by the Council.*

Annual Report of the Regents of the University of the State of New York—*by the Regents to JAMES PRINSEP, and by him to the Society.*

A Catechism in the *Tai* or *Shyan* language, by NATHAN BROWN, Esq. printed at *Sadiya*—by Captain JENKINS.

Tarjamah Kitab ul Filasafat, an Arabic work, printed at the Government Press of MAHOMED ALI, at *Cairo*. [See correspondence above.]

Meteorological Register for August 1838—*by the Surveyor General.*

Meteorological Registers from Mauritius in continuation of the series before sent—*by M. JULIEN DESJARDINS.*

LARDNER's Cabinet Cyclopaedia, "Statesmen," vol. 5th—*from the Booksellers.*

Two Arabic books, printed, entitled "*Destur-ul-Qorât*," and "*Kutaba Ekhtiya'*"—*presented by Maulavi ZA'HUR ALI.*

The Gardens and the Menagerie of the Zoological Society delineated, 2 vols. purchased at 16 rs. on recommendation of the Museum Committee.

Literary and Antiquities.

A despatch from the Acting Secretary at *Bombay* forwarded, through the Government of India, Lieut. POSTANS' journal of his visits to *Gizner*.

The facsimiles of the inscriptions are stated to be on their way—when we shall be able to revise the translations and place the whole upon sure foundations.

Extract of a private letter from *Professor Lassen*, dated *Bonn*, 19th February, 1838, (which however only reached *Calcutta* on the 16th September) was read by the Secretary, announcing his discovery of the *Bactrian* language being closely allied to, if not identical with, the *Pali*, and propounding a new alphabet, in almost exact accordance with that adopted in the July No. of the Journal.

We venture to extract the passage alluded to:—

"To the very curious fact, that those inscriptions are in *Pali* (or perhaps *Prakrit*), let me present you with the analogous one, that the legends of the *Bactrian* coins, at least in my opinion, are also in *Prakrit*. But here I must ask your pardon for some alterations I make in your alphabet of that character. The letter *u* or *3* cannot, I think, be *d*, because this vowel is not expressed by any sign in other places, where it ought to be written. I propose to read it *u* or *j*. Then I find, that *3* may every where be read *u* or *k*. The legend on the coin of *AMYNTOS* (*Asiatic Journal*, v. p. 720) I read thus: *Maharaja jayavata amito*. This dialect omits *a* before *t* and *d*, as the names prove; *jayavata* is therefore the *Prakrit* जयवतो, *Sanskrit* जयवान्, the victorious. The word for *Amintros* is *apalikata*, the *Prakrit* of the *Sanskrit* अपलिगतः, the unrepulsed. The coin of *Ayos* (vol. IV. plate XXII. No. 1.) I read: *Maharaja rajadivata mahata Ayos*. You have yourself observed, that *3* *di*, is the correct reading. *Mahata* is again for महतो, the great. The name of *MENANDER* would in *Prakrit* drop the *r* (in *vanḍovu*), and this western dialect besides the *a* before *d*. I

therefore suppose, that the penultimate letter is in fact another *δ*, and that the spelling is *misread*. This *δ* recurs in the title for *just*, which may be *damikō*, or *दामिको* v. *दामिको* in Prakrit.

"The uncurtailed form of *k* is, if I may be allowed to go on with my conjectures, *η*, and not the figure, you have adopted from the coins of EVONATIDES. I appeal to those of ANTIALKIDES and to the titles, in which *η* is immediately before the final *δ*. The term for saviour, I am not so certain of; it may be *tatarō*, that is the Prakrit *तातारो* or perhaps *ताहारो* for the Sanskrit *ताता*, the rescuer. The native word for *brother of the king* puzzles me very much, and I am as yet quite at a loss. The curious coin of AGATHOCLEIA presents another difficulty. *θεόσωρος* is really a Greek word found in late writers, as *HELIOBORUS*, as for instance as epithet to *ζῆλος* 'a zeal which amulates the gods.' It is *genus communis* and the genitive of the feminine like the masculine: therefore I propose reading ΘΕΟΤΡΟΦΟΡ, if I am not mistaken, the omicron is still visible. Do not, I pray, take this correction unkindly, we have at *Bonn* no Bactrian coins, but plenty of Greek dictionaries. The reverse cannot have the name of the queen, on account of the termination in *p*, *δ* and I believe you are quite right, when you suppose the epithets to be (great) king and saviour. The name might by my alphabet be read *Mikōaidō*, in fact *Μικωνίδης* may be a Greek word, though I cannot prove its real existence as a name.

"It will please you to hear, that your conjecture on *τεσσαριστον* has also been proposed by a German translator of *Strabo*, Mr. GAOSKUND, who, however, has not had the happy thought of comparing the name with *Saráshttra*. Some manuscripts leave out the *τε* entirely, and this I should prefer reading *τῆρε λαρόθεν καλονόμενον καὶ τὴν Σιγερτίδος βασιλείαν*. My conjecture *Trigerte* is hardly tenable; it must be some country on the coast. PROLEMY's *Syrastrene* is the peninsula of *Guzerate*, and the kingdom of *SIGERTIS* (सिगर्त in Sanskrit?) must be placed near *Baroda*. PROLEMY has a town, *Stripala* on the *Nerbudda*, where it is joined by the *Mophis* or *Myhes*, at least according to his information. Here at all events we must seek for *SIGERTIS*."

A letter from Professor SCHLEGEL of the same place, acknowledged the receipt of the 2nd and 3rd vols. of the *Mahābhārata*, and of the *Journal*. He hopes shortly to present a return in kind. The following extract alludes to a discussion which occupies the learned of Europe at present:

"J'ignore si le *Journal Parisien*, *la Revue des deux Mondes*, vous parvient à Calcutta. Dans cette supposition les deux autres pièces n'auraient besoin d'aucune explication ultérieure. Dans le second cahier du mois d'Août 37 se trouve un mémoire de M. LETRONNE, inscrit: *Sur l'origine Grecque des Zodiacs prétendus Egyptiens*. M. LETRONNE occupe le premier rang parmi les Hellenistes et les antiquaires de la France actuelle; j'entretiens avec lui des relations fort amicales. Il a cru par erreur que j'adhérais à son hypothèse; ce qui m'a forcé d'entamer cette discussion. Les assertions de M. LETRONNE vont plus loin que le titre de son Mémoire n'indique: il veut que les douze constellations du zodiaque, partout où elles se trouvent, auraient été empruntées aux Grecs. J'abandonne les Egyptiens à leur sort: je pense qu'ils se tireront d'affaire. Mais quant aux Indiens, je proteste. Dans les quatre distiques Sanskrits de ma façon* vous trouverez une indication légère de mes principaux arguments, dont j'ai développé une partie seulement dans le *Journal Orientaliste* de M. EWALD. J'examinerai ensuite la nomenclature Indienne et vraiment ancienne dans son rapport avec les zodiaques sculptés. Je n'en connais que deux qui aient été gravés: l'un dans les *Transactions Philosophiques*, de la Soc. Royale des Sciences pour l'an 1772 (répété par Bailly), l'autre dans les *Mémoires de la Soc. Asiat. de Londres*, vol. III. pl. 1. M. LETRONNE les rejette comme modernes. Cela n'est peut-être pas bien sûr, au moins à l'égard de celui du Cap Comorin: mais soit! je le veux bien. C'est un argument en ma faveur.

* We have not space to insert the Sanskrit verses.—Ed.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of September, 1838.

| Day of the Month. | Atmospheric Pressure. | | Temperature. | | Hygrometry. | | Aqueous tension. | | Weather. | | Temperature. | | Hygrometry. | | Aqueous tension. | | Weather. | | Aspect of sky. | |
|-------------------|-----------------------|-------------------------|--------------|---------|-------------|-----------|---------------------|------------------|---------------|----------|---------------------|---------|-------------|-----------|---------------------|------------------|---------------|----------|----------------|---------------------|
| | Old Stand. Barometer. | New Barom. at 32° Fahr. | Well water. | Or air. | Dew-point. | Wet-bulb. | Differential Therm. | Hair Hygrometer. | by Dew-point. | by bulb. | by Hair Hygrometer. | Or air. | Dew-point. | Wet-bulb. | Differential Therm. | Hair Hygrometer. | by Dew-point. | by bulb. | | by Hair Hygrometer. |
| | | | | | | | | | | | | | | | | | | | | |
| 1 | 30.645 | 30.587 | 81.4 | 75.0 | 4.9 | 3.0 | 4.9 | 85 | 85 | 85 | 85 | 81.4 | 75.0 | 4.9 | 3.0 | 85 | 85 | 85 | 85 | s. r. all day |
| 2 | 733 | 714 | 86.4 | 79.8 | 4.9 | 4.8 | 4.9 | 86 | 86 | 86 | 86 | 86.4 | 79.8 | 4.9 | 4.8 | 86 | 86 | 86 | 86 | s. a. c. below |
| 3 | 749 | 709 | 85.1 | 77.5 | 4.4 | 5.3 | 4.4 | 86 | 86 | 86 | 86 | 85.1 | 77.5 | 4.4 | 5.3 | 86 | 86 | 86 | 86 | c. d. s. do. |
| 4 | 668 | 697 | 87.9 | 78.5 | 5.6 | 7.0 | 5.6 | 87 | 87 | 87 | 87 | 87.9 | 78.5 | 5.6 | 7.0 | 87 | 87 | 87 | 87 | c. d. s. do. |
| 5 | 660 | 623 | 86.5 | 73.5 | 6.8 | 7.4 | 6.8 | 87 | 87 | 87 | 87 | 86.5 | 73.5 | 6.8 | 7.4 | 87 | 87 | 87 | 87 | do. do. day. |
| 6 | 638 | 613 | 87.4 | 77.3 | 5.9 | 7.4 | 5.9 | 87 | 87 | 87 | 87 | 87.4 | 77.3 | 5.9 | 7.4 | 87 | 87 | 87 | 87 | do. do. day. |
| 7 | 640 | 611 | 86.3 | 77.5 | 5.6 | 5.3 | 5.6 | 88 | 88 | 88 | 88 | 86.3 | 77.5 | 5.6 | 5.3 | 88 | 88 | 88 | 88 | do. do. day. |
| 8 | 630 | 594 | 87.3 | 77.8 | 5.5 | 6.4 | 5.5 | 88 | 88 | 88 | 88 | 87.3 | 77.8 | 5.5 | 6.4 | 88 | 88 | 88 | 88 | do. do. day. |
| 9 | 630 | 597 | 87.7 | 77.9 | 5.5 | 6.4 | 5.5 | 88 | 88 | 88 | 88 | 87.7 | 77.9 | 5.5 | 6.4 | 88 | 88 | 88 | 88 | do. do. day. |
| 10 | 611 | 581 | 87.0 | 76.0 | 4.9 | 6.0 | 4.9 | 88 | 88 | 88 | 88 | 87.0 | 76.0 | 4.9 | 6.0 | 88 | 88 | 88 | 88 | do. do. day. |
| 11 | 591 | 576 | 86.7 | 76.0 | 3.6 | 4.6 | 3.6 | 88 | 88 | 88 | 88 | 86.7 | 76.0 | 3.6 | 4.6 | 88 | 88 | 88 | 88 | do. do. day. |
| 12 | 606 | 590 | 86.7 | 76.0 | 3.6 | 4.6 | 3.6 | 88 | 88 | 88 | 88 | 606 | 590 | 3.6 | 4.6 | 88 | 88 | 88 | 88 | do. do. day. |
| 13 | 606 | 515 | 86.7 | 76.0 | 3.6 | 4.6 | 3.6 | 88 | 88 | 88 | 88 | 606 | 515 | 3.6 | 4.6 | 88 | 88 | 88 | 88 | do. do. day. |
| 14 | 736 | 709 | 88.6 | 78.6 | 4.9 | 5.7 | 4.9 | 89 | 89 | 89 | 89 | 736 | 709 | 4.9 | 5.7 | 89 | 89 | 89 | 89 | do. do. day. |
| 15 | 756 | 731 | 89.9 | 77.6 | 4.9 | 5.7 | 4.9 | 89 | 89 | 89 | 89 | 756 | 731 | 4.9 | 5.7 | 89 | 89 | 89 | 89 | do. do. day. |
| 16 | 781 | 753 | 89.9 | 77.6 | 4.9 | 5.7 | 4.9 | 89 | 89 | 89 | 89 | 781 | 753 | 4.9 | 5.7 | 89 | 89 | 89 | 89 | do. do. day. |
| 17 | 801 | 753 | 89.9 | 77.6 | 4.9 | 5.7 | 4.9 | 89 | 89 | 89 | 89 | 801 | 753 | 4.9 | 5.7 | 89 | 89 | 89 | 89 | do. do. day. |
| 18 | 815 | 769 | 89.9 | 77.6 | 4.9 | 5.7 | 4.9 | 89 | 89 | 89 | 89 | 815 | 769 | 4.9 | 5.7 | 89 | 89 | 89 | 89 | do. do. day. |
| 19 | 797 | 753 | 84.3 | 71.9 | 5.2 | 5.8 | 5.2 | 89 | 89 | 89 | 89 | 797 | 753 | 5.2 | 5.8 | 89 | 89 | 89 | 89 | do. do. day. |
| 20 | 733 | 698 | 85.7 | 71.1 | 5.8 | 7.1 | 5.8 | 89 | 89 | 89 | 89 | 733 | 698 | 5.8 | 7.1 | 89 | 89 | 89 | 89 | do. do. day. |
| 21 | 733 | 698 | 85.7 | 71.1 | 5.8 | 7.1 | 5.8 | 89 | 89 | 89 | 89 | 733 | 698 | 5.8 | 7.1 | 89 | 89 | 89 | 89 | do. do. day. |
| 22 | 743 | 702 | 87.4 | 74.3 | 6.9 | 8.1 | 6.9 | 89 | 89 | 89 | 89 | 743 | 702 | 6.9 | 8.1 | 89 | 89 | 89 | 89 | do. do. day. |
| 23 | 743 | 694 | 85.3 | 70.0 | 5.7 | 4.8 | 5.7 | 89 | 89 | 89 | 89 | 743 | 694 | 5.7 | 4.8 | 89 | 89 | 89 | 89 | do. do. day. |
| 24 | 728 | 697 | 86.5 | 70.0 | 5.2 | 6.0 | 5.2 | 89 | 89 | 89 | 89 | 728 | 697 | 5.2 | 6.0 | 89 | 89 | 89 | 89 | do. do. day. |
| 25 | 743 | 697 | 87.7 | 70.4 | 5.7 | 6.7 | 5.7 | 89 | 89 | 89 | 89 | 743 | 697 | 5.7 | 6.7 | 89 | 89 | 89 | 89 | do. do. day. |
| 26 | 734 | 691 | 86.5 | 70.0 | 4.6 | 5.5 | 4.6 | 89 | 89 | 89 | 89 | 734 | 691 | 4.6 | 5.5 | 89 | 89 | 89 | 89 | do. do. day. |
| 27 | 667 | 723 | 80.5 | 70.0 | 4.6 | 5.5 | 4.6 | 89 | 89 | 89 | 89 | 667 | 723 | 4.6 | 5.5 | 89 | 89 | 89 | 89 | do. do. day. |
| 28 | 601 | 766 | 80.5 | 70.0 | 4.6 | 5.5 | 4.6 | 89 | 89 | 89 | 89 | 601 | 766 | 4.6 | 5.5 | 89 | 89 | 89 | 89 | do. do. day. |
| 29 | 641 | 606 | 80.5 | 70.0 | 4.6 | 5.5 | 4.6 | 89 | 89 | 89 | 89 | 641 | 606 | 4.6 | 5.5 | 89 | 89 | 89 | 89 | do. do. day. |
| 30 | 680 | 680 | 80.5 | 70.0 | 4.6 | 5.5 | 4.6 | 89 | 89 | 89 | 89 | 680 | 680 | 4.6 | 5.5 | 89 | 89 | 89 | 89 | do. do. day. |
| Mean. | 59.721 | 59.496 | 87.1 | 85.5 | 60.0 | 5.0 | 5.0 | 89 | 89 | 89 | 89 | 59.721 | 59.496 | 60.0 | 5.0 | 89 | 89 | 89 | 89 | showy, hot. |

Abundance from Calcutta from the afternoon of the 26th to the end of the month prevented my registering observations for that period, but in order not to break the series of two barometers and thermometer, I have filled these columns from the register of the barometer.

Observations of the month.

Abundance from Calcutta from the end of the month prevented my registering observations for that period, but in order not to break the series of the two barometers and the thermometer, I have added these estimates from the register of the surveyor general's office, using a constant correction derived from the observations of this month.

JOURNAL

OF

THE ASIATIC SOCIETY.

No. 82.—October, 1838.

I.—*Report of a visit made to the supposed Coal Field at Bidjeegurh (Vijayagadha). By Mr. GEORGE OSBORNE, Sub. Dep. Opium Agent, Benares division.*

The existence of coal fields in the pergunna of *Bidjeegurh*, has from time to time been reported, by an individual of the name of *HYLAND*, who, from self-interested motives, long refused to disclose the locality, but at length announced by letter to Capt. *STEWART*, Fort Adjutant, at *Chunar*, his willingness to disclose the site of the mine, to any person that Government might be pleased to appoint for that purpose.

3. On the occasion of the visit of the Right Honorable the Governor General to *Chunar*, in November last, his Lordship was pleased to honor me with his commands to proceed to the *Bidjeegurh* pergunas, to examine and report upon the nature and extent of Mr. *HYLAND*'s discoveries.

4. In obedience to these instructions, I accordingly left *Chunar* on Monday morning the 27th of November last, and arrived at *Bidjeegurh* on the 1st of December.

5. In the 3rd para. of the letter to which reference has been already made, Mr. *HYLAND* states: "The place from which my specimens are supplied, is situated about 8 miles southeast of *Bidjeegurh* fort, and about half a mile east from an unfrequented pass called *Umlah Ghat*: it is there found in a stratum 3 feet thick, &c."

6. In his depositions before Mr. *WOODCOCK*, dated 23rd August, 1837, (*vide page 33*.) he further states: "I discovered good coal $3\frac{1}{2}$ miles southeast of the village of *Kodis* in the jungle, and I brought away

a handful : the vein of coal was 3 feet thick, 1 foot and $\frac{1}{2}$ from the surface, and running horizontally."

7. Accordingly, my first attention was directed to this locality, to which Mr. HYLAND undertook to conduct me. On the 2nd December, therefore, in company with him I descended the Umlah Ghat. On the 3rd Mr. HYLAND pointed out two spots, where, he *then* stated to me "*he had been informed*, that coal had been excavated, on some former occasion, but that he himself had never obtained ocular demonstration of its presence."

8. At the first of these two places, unpromising as it appeared, I commenced excavations, at a spot laid down from observed bearings. In the accompanying sketch it is marked *r*, and lies at the foot of a perpendicular precipice, over which in the rains a torrent is precipitated, and which in the course of time, has worn away the rock, so as fully to develop the stratification. At the base of this fall, is seen a vein of what I consider to be hard flinty shale, which I find to possess a specific gravity of from 2.33 to 2.547, and of which a brief examination is given below.

9. The width of this fall is about 100 feet, and its height about 80, of which 60 feet, or perhaps more, from the top, are strata of sandstone ; then comes the vein of shale, running in nearly a horizontal direction southeast by south, and varying in thickness from 12 to 14 feet : the exposed surface appears to be a hard shale or flinty slate. I penetrated, for 8 or 10 feet below the mass, at right angles to its direction or strike, and arrived at a hard sandstone. I then sunk a vertical shaft but was stopped by a similar rock, about 3 feet below the surface. The opening of a small cave presenting itself on the left extremity, I had it enlarged, hoping by this means to penetrate to the rear of the vein, the cave was not more than 18 inches in height, and appeared to run nearly horizontally. I was in hopes that the north side of the cave would have afforded encouraging indications, but was disappointed, meeting only with the same indurated slate-stone.

10. About 1000 or 1200 yards southeast of this spot, appears another bed of shale, or rather perhaps another portion of the same bed, at the base of the rock forming the bank of the adjoining nullah at *g* ; a similar vein is also developed at *h*.

11. The nullah at *g* runs through the formation, which appears at intervals on the abrupt face of the banks of the nullah on either side. About *g* the formation is exposed for about 14 feet in perpendicular height ; it is composed of thin alternate undulating strata of a flinty slate and a species of indurated clay of about half an inch to 2 inches in thickness ; it is harder as it approaches the bottom of the

nullah, where it seems to pass into a hard bluish-black sandstone; it is there exceedingly hard, requiring several smart blows with the hammer before a fracture can be effected. The formation about the bed of the nullah is singular; it is composed of a quartzose rock, or a saccharoid quartz, in distinct granular concretions, emerging at angles varying from $13\frac{1}{2}^{\circ}$ to 35° , but dipping south upon the northern side of the nullah, and dipping north, from the other side, at angles varying from $31\frac{1}{2}^{\circ}$ to $46\frac{1}{2}^{\circ}$.

12. The bed of the nullah is composed of rolled boulders of flinty slate, passing into a very hard sandstone. The strata of shale are nearly horizontal, gently undulating, and as they disappear from one bank of the nullah, they reappear at no great distance upon the opposite side, thus alternately appearing and disappearing throughout the whole length of the nullah. The same general formation holds good, wherever I have here examined. The vein appears as if crushed by the vast super-imposed weight of sandstone, which here towers up to about 6 or 700 feet.

13. The inclined strata of quartzose rock, as shown above, in many cases, run obliquely across the bed of the nullah, presenting a semi-cylindrical appearance, and almost appear as if constructed for a centering, on which a tunnel was to be supported: the strata are concentric, and from three to six inches in thickness,—the formation is hard, heavy, bluish-black, mixed with shades of red, and appears to be the connecting link between sandstone and flinty slate.

14. All the specimens of shale obtained here, were anxiously assayed by the blow-pipe; they are easily heated to redness, but do not appear to contain any combustible matter in their composition; with alkalis, they fuse into a slightly green glass, denoting the presence of siliceous matter, or oxide of iron.

15. Mr. HYLAND next directed my attention to a spot marked *a* in the sketch.

16. On commencing my examination here, I first proceeded to the point *b*, an absolute precipice, of about 120 feet in depth by about 150 to 200 feet in breadth: over this in the rainy season, a torrent of some magnitude is precipitated. The nullahs *m* *r* and *o* are themselves mountain-torrents; they all however meet at *b*, and after a heavy and continued shower, must fall with grand effect into the chasm below.

17. At this season of the year (December) the channel was nearly dry; the stratification was consequently fully developed. Below the fall is a stratum of hard shaly matter, exactly resembling that at *r*. This

vein, also, is nearly horizontal, and to be penetrated only by great labour. Blasting might be had recourse to, but for the tottering and overhanging masses above. This operation however, would require much more time than was at my command.

18. The bed of the nullah is composed of enormous masses, precipitated in the course of ages, from the summits of the eminences on each side of the nullah. Some of the blocks contain possibly 1000 cubic feet or more, the interstices are filled with boulders to an unknown depth. The ridge B, A, C, runs southwest by west, the highest point being at C; the strata are nearly horizontal, and dip to the northwest, at an angle varying from 3° to 13° ; the point C I estimate at 400 feet above the bed of the nullah, of which 60 or 70 feet from the top is an absolute precipice; thence to the nullah the slope is at an angle of about 5° , and covered with jungle of the most dense description. The width of the ridge from C to D probably exceeds 800 yards. I followed the course of the nullah to F, where I found limestone dipping southwest at an angle of $14^{\circ} 20'$, and returned to camp by a difficult pass at D, through the thickest grass and bamboo jungle I ever beheld. A tiger sprung on one of my attendants near this spot, but the man was rescued.

19. I next commenced a close examination of the point A, which, however unlike the description, is the spot to which Mr. HYLAND alludes in his deposition (page 37, Quest. 15) where, he says, when asked what obstacles he met with, they were "Large stones and earth which appeared to cover the spot. I did not dig and therefore cannot tell what quantity, as I did not see the size of the stones clearly." The first glance, was sufficient to convince me that no human agency had deposited the massive rocks, in the position I found them; added to which bamboos, and varieties of forest trees, the growth of years, had firmly rooted themselves in the soil. A colony of wild bees had also established themselves immediately above the spot; their dislodgement proved troublesome and caused some delay.

20. On the 6th December, I ascended to the precipitous crag, about 150 feet or more above the bed of the nullah, and commenced a careful examination of this spot. I here found shale in veins of about a foot in thickness, alternating with sandstone. I penetrated some little way into the veins, but from their hardness and position, made but small progress; the exposed part of the strata presenting the same vertical plane, it was necessary to undermine the shale by removing the stratum immediately below, and this, being a very hard sandstone, was a matter of some difficulty.

21. In this vicinity, I observed two or three small exudations of petroleum. This was so far encouraging, for Professor JAMESON observes, "it generally flows from rocks of the coal formation, and usually from the immediate vicinity of beds of coal, &c." The surfaces of projecting rocks below the springs are slightly coated with it, where, from long exposure to the sun, it has become completely hard, but without losing its characteristic smell.

22. On the 7th December, I continued the excavations on the face of the rock; dug down deeper and laid bare the original formation. The whole of the space within the dotted line from *a* to *b* was now laid bare, exhibiting only alternate strata of sandstone and shale. Into one vein marked *b*, I penetrated as far as the workmen could well act; the roof of this vein was formed of a singular conglomerate of from three to six inches in thickness: *c* is a vein of slate, which might answer for roofing slate, as some of the lamina I broke out, were nearly two feet in length.

23. Small plates of talc were separated from between the lamina of slate, and some few on being split presented an appearance, as if they had been covered with a coarse gold leaf.

24. The space from *a* to *b* is what Mr. HYLAND imagines has been artificially closed, and that it covered the entrance to a coal mine; I had in consequence, every particle of soil (which in my opinion is the gradual accumulation of vegetable decomposition, mixed with earthy particles fallen from the summit), removed to a depth of ten feet or more, until I was stopped by the original sandstone rock at *d*.

25. I consider it to be a mere waste of time and money, to dig deeper in that direction, and I am strengthened in this opinion from examination of the formation about the fall. At *b*, between three and 400 yards north of the present excavations, and about 150 feet below there exists nothing but hard flinty slate alternating with sandstone.

26. The veins of slate were traced along the surface of the rock for about 100, or even 150 feet, without the slightest difference in the general formation: several masses of a tubaceous limestone were excavated, containing imbedded fragments of slate, and (*apparently*) traces of bones. I also found the bones of a human being, about 3 feet below the surface, but judging from their appearance they had lain there for a century.

27. The above described excavations were made, entirely upon the statements of Mr. HYLAND; he has failed in pointing out a spot, even answering to the description given at pages 30 and 33 of his deposition.

It is not possible to precipitate a *mass of rock* from the summit, so as to remain on the spot marked *a*, at page 11; the ledge there is barely broad enough for two men to pass abreast—in many places not for one man to find sure footing.

28. I have now carefully examined the locality pointed out by Mr. HYLAND: (*vide sketch*.) The strata from *A* to *B* may be called a longitudinal section, laid bare to the fall at *B*; it runs, doubtless underground to *I*; is exposed on alternate sides of the nullah to *G*, runs underground to *F*, where a transverse section is exposed: an oblique section is again seen at *H*. An imaginary horizontal section of these parts, I estimate at about 600, or perhaps 700 feet below the summit of the circumjacent crags, *L* and *M*, &c.

29. At *K*, page 4, is seen the mine of *Kusti*, (crude sulphate of iron,) containing about 39 per cent. of the dry salt: (*vide analysis*, page 41.) The vein follows the curve at the bottom of the precipice, about 200 feet from the summit. I had not sufficient leisure to examine the extent of the mine, but from general description, I learn the mineral may be obtained in almost any quantity. It appears in the state of a fine white efflorescence, commingled with the slaty matter of the matrix.

30. Mr. HYLAND having thus failed in pointing out a deposit of coal, or even the existence of the mineral, I did not consider myself justified in remaining longer, especially, as one out of my three weeks had thus expired, and so very unprofitably. I therefore left on the 9th December, ascended the narrow and difficult pass at *M*, impracticable for beasts of burden, and reached *Bidjessgurh* in the evening. Mr. HYLAND however determined to remain behind at the late scene of operations, with the view of regaining the entrance of some supposed hidden mine. Mr. H. has distinctly acknowledged to me, that he *does not know* whence the specimens of coal he exhibited were obtained; he merely *supposed* them to have been dug out from the spot lately examined by me: *there* I have determined, it does not exist: he has moreover confessed to me, on two several occasions, and in direct opposition to the 4th para. of his letter at page 31, that he had never seen coal excavated from the *Ghaggir* nudee.

31. On Monday the 11th December, I marked out a spot in the *Samdha* nullah, below the, now deserted, fortress of *Bidjessgurh*, erected a bund, drained the enclosure and proceeded to denude a portion of the bank, and expose the formation of "bituminous marle slate," which I find abounds in all parts of the valley of the *Ghaggir* and *Samdha*, and of which, my present locality was selected as a fair example of the whole.

Fig 1

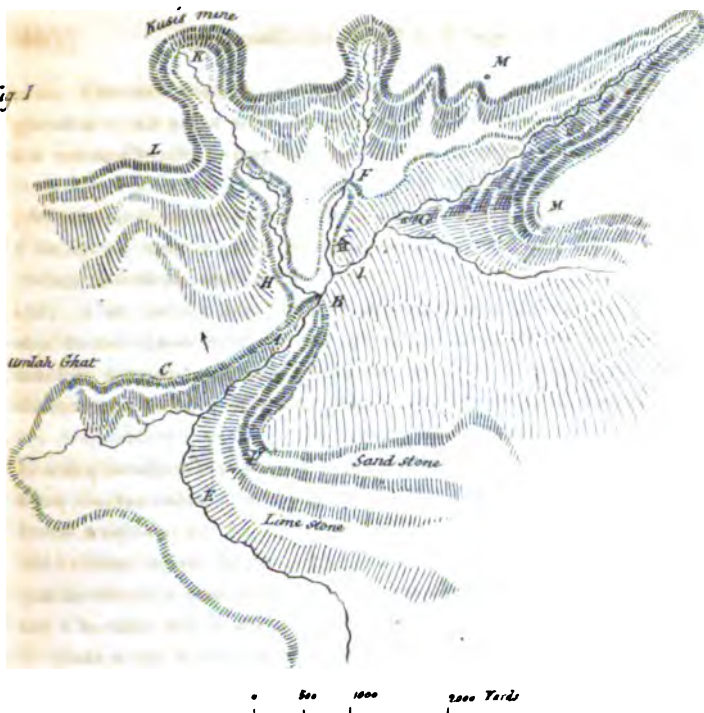
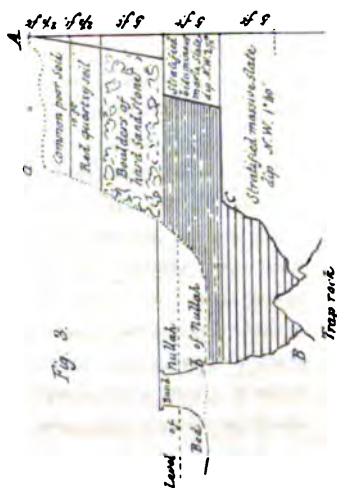
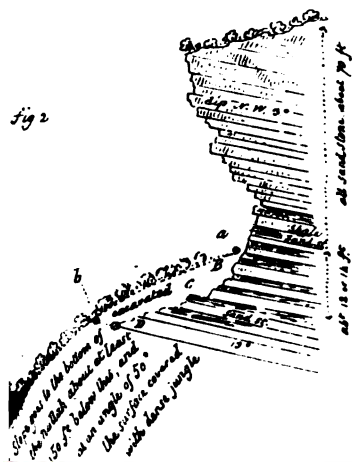
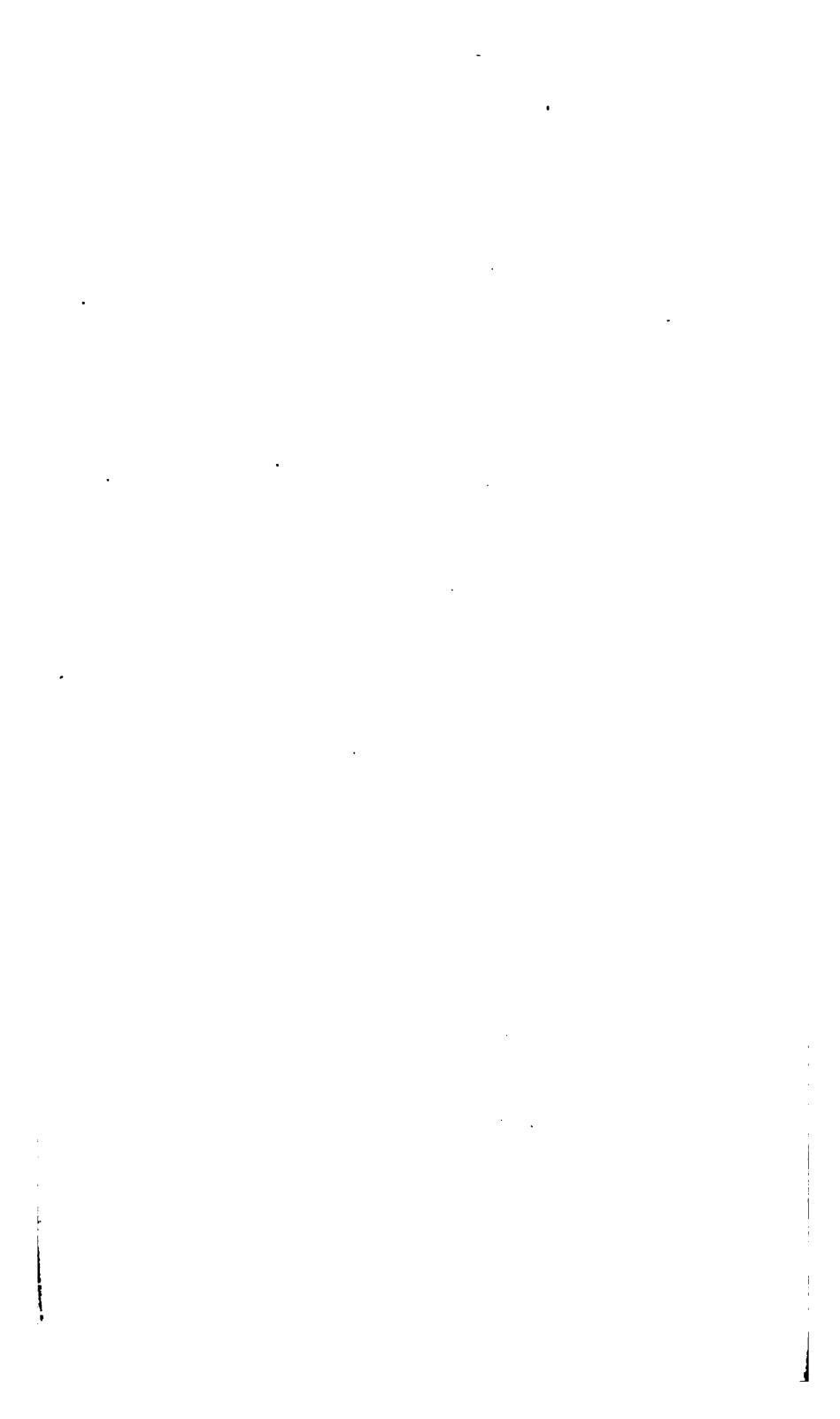


Fig 2





32. I here prosecuted my researches until the evening of the 15th. I penetrated to some depth below the bed of the nullah, and came to what I am inclined to consider a primitive rock, without meeting with the slightest indication of coal. The following sketch shews the result of my labours. The dotted line *a, b*, is the outline of the face of the nullah; the strong line *A C B*, is the sectional line of the part removed, exposing the strata as they occur.

33. The rock which I found protruding at *B*, was so excessively hard, that fragments were with great difficulty excavated; the tools from the *Chuser* magazine were broken; the common native implements were fractured at once; the rock exhibits numerous threads of iron, a specimen marked, I have the honor to forward. By analysis I find it contains about 35 per cent. of iron (*vide page 44*); the want, however of a platinum crucible, alone, prevented my attempting a more decisive analysis.

34. The recent fracture of the massive slate had a greenish-black appearance; it was slaty, splintering with a glistening lustre; when the slate was drier, it was more of an Indigo-black. The upper surface of the strata at *C*, was perfectly smooth, the line of separation between that and the bituminous marle slate beautifully distinct: the strata run northwest, dipping in that direction at $1^{\circ} 40'$.

35. I had not leisure to ascertain the depth to which this interesting formation descended: the large metalliferous mass before mentioned was enclosed, or enveloped, in the strata, the form very irregular, and the cavities formed by its protuberancies were filled up with smaller slaty fragments, some in a pulverized state, united into a tolerably compact mass by water—which arose almost faster than it could be baled out.

36. The bituminous marle slate, super-imposed upon the massive slate, follows the same order of formation; the divisions of the strata are not at right angles with the plane of the horizon, but recline at an angle of $20\frac{1}{2}^{\circ}$; they are separable with the greatest ease, and with care might be taken up in layers; they all dip to the northwest at an angle of $2\frac{1}{2}^{\circ}$: these seams are crossed by others at an angle of $37\frac{1}{2}^{\circ}$.

37. This bituminous marle slate is to be seen, cropping out from the banks, in a very great number of places along the *Samdha* and *Ghaggir* nullahs, but not a vestige of coal. My own observations, therefore, coupled with the corroborative statements of many residents of this neighbourhood, lead me to the conclusion, that coal has never yet been found in the bed of the *Ghaggir*, or of its tributary rivulets. I, however, began to trace the channel towards its confluence with the

Soane, and the annexed is a general section of the hills of my then locality; the heights are merely estimated, not having an opportunity of measuring them; the scenery of the back-ground is also sketched in, shewing the position of the fortress of *Bidjeegurh*.

38. At *a* is a section of the *Ghaggir*; there it is deep, its waters being stopped by a solid bund of masonry, on which is erected a handsome bridge of ten arches, now in good repair. By a Hindee inscription it appears to have been constructed in 1829 Sumbut, (1771 A. D.) by BULWUNT SINGH DEO. The *Ghaggir*, in its course to *b*, is precipitated over two falls, the last of which is of some magnitude; the point *b* is at the junction of the *Samdha* and *Ghaggir* nullahs, where the strata of sandstone and shale, are confusedly and violently contorted.

39. On Monday the 18th December, I reached the *Soane* by a pass, known as the *Ek Poway Ghat*. On the route I passed over an extensive formation of what, from its geological position, I consider to be mountain limestone. It is of various colors and the lighter description, will, as I have already ascertained, answer for the purposes of lithography*.

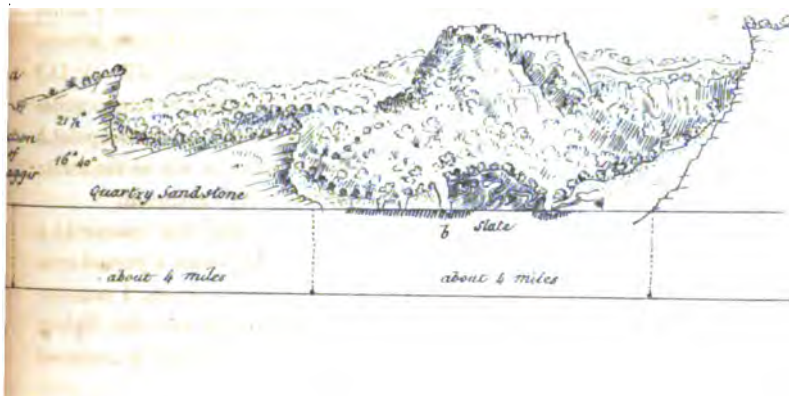
40. Other varieties become black on exposure to the atmosphere, the specimen, marked D, appears capable of receiving a good polish; in this case, it will answer all the purposes—in fact, it is a black marble. I had not leisure to ascertain the extent of this interesting formation; from native report however it is by no means limited; its general dip is north, and northwest, and it is well developed in the bed and banks of the nullah near *Markoundeh*.

41. About a mile south of this village it is covered by soil, or only occasionally seen; it is seen again on the banks of the *Soane*, and there reposing, upon Greywacke: this formation I traced for 3 miles along the banks of the river, east of my encampment near the confluence of the *Ghaggir* with the *Soane*.

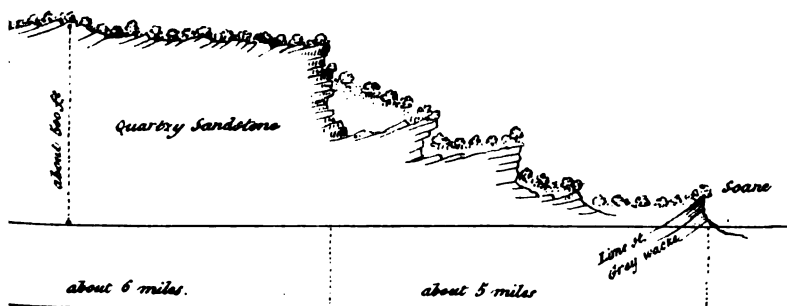
42. On the right bank of this river, I also found limestone in regular strata protruding from the banks, and whilst examining this formation, I accidentally picked up a single specimen of a bituminous coal.

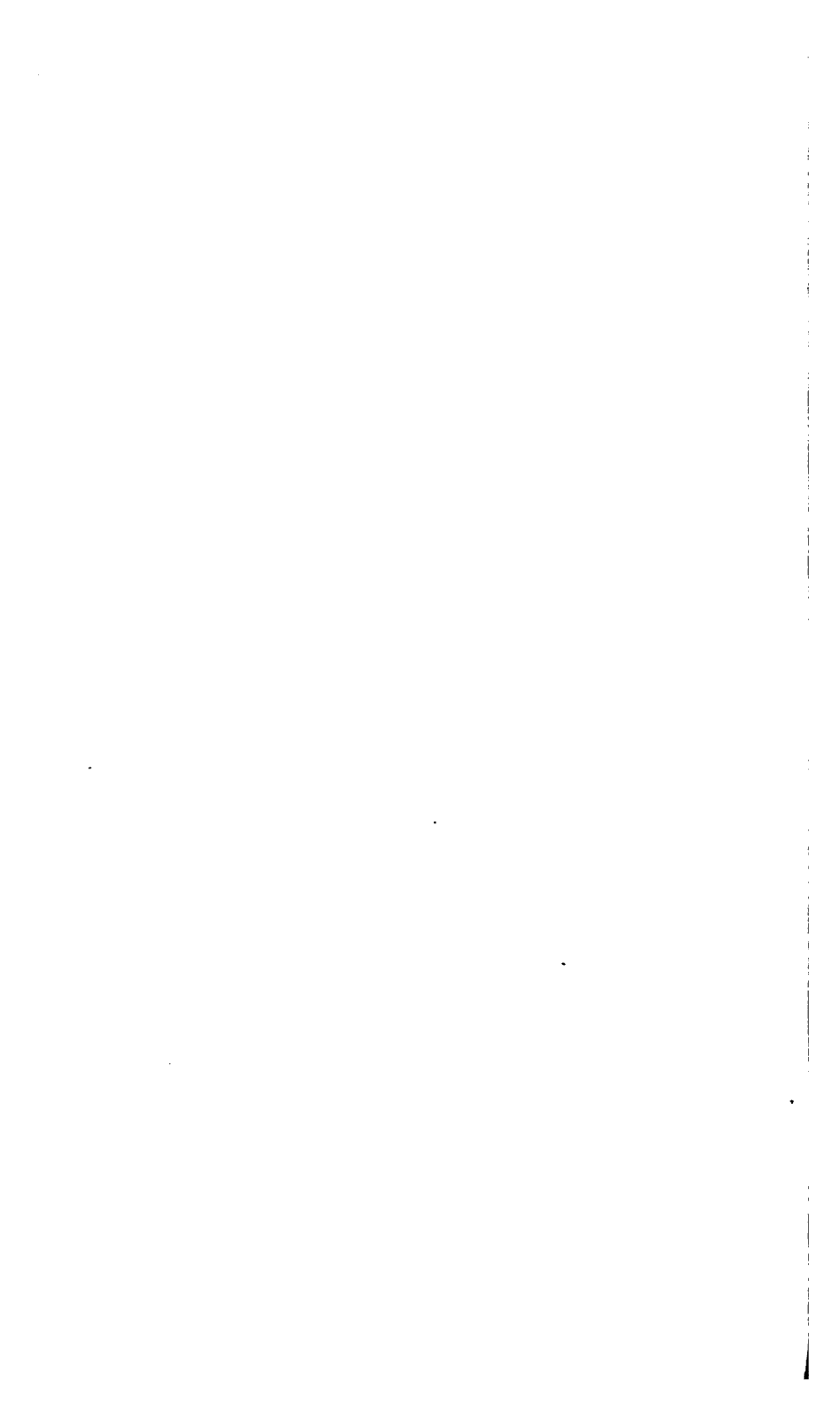
43. Not to enter into a minute detail of my labours, it will, I trust, suffice, to say, that for four days, I narrowly scrutinized the banks of the *Soane*, the bed and banks of the *Rehr* nullah for about 3 miles, the *Bijul* for about 10 miles, and the *Nowah* nudee, for about 3 miles: from the last three, I did not obtain a single specimen of coal, whilst from the bed of the *Soane* I collected about 30 or 40 specimens of

* See specimen C.



2





various sizes, the aggregate weight of which did not exceed one pound: this I considered as conclusive evidence of the specimens having been washed down, only by the waters of the *Soane*.

44. Nearly a month had now elapsed: I was in consequence, reluctantly compelled to return to *Chunar*, with the intention of applying to the *Benares* opium agent, for extension of leave for another fortnight, in order to prosecute the clue I had just obtained. Before however leaving this part of the country, I caused to be notified to all classes of inhabitants the object of my search, offering at the same time a reward of Rs. 200 to any individual who would engage to point out a coal deposit in the perguna, and had the satisfaction of seeing them readily interest themselves in the search. I then returned to *Chunar* on Friday the 29th December, 1837.

45. As already stated in the 7th para. of my letter, I readily obtained an extension of leave for a fortnight, and arrived at the *Soane*, as stated in the 8th and 9 paragraphs, on the 29th January, 1838.

46. I commenced a minute search along the bed of the *Soane*, and also upon its banks, from the former I collected a number of small specimens of coal, all however, much to my mortification bearing evident traces of having been washed from a considerable distance. I continued to progress westerly, and passed over a second formation of black mountain limestone, dipping westerly. This I traced for some distance up the *Chutwar* nullah, without meeting any encouraging indication: on the contrary, I found the primitive clay slate protruding on the highest parts of the adjacent hills: in other parts I found it alternating with limestone.

47. The nature of my search had by this time become familiar with the natives of the country; the offer of a pecuniary reward had the effect of inducing them to exert themselves in the search: they all agreed in the opinion, that the specimens I had obtained were washed from a deposit, situated near the source of the *Soane*; this would bring the locality in about the same parallel of latitude with the coal fields of *Palamow* and *Sirguja*, as described by Captains FRANKLIN and SAGE, in the "*Gleanings of Science*" for July 1830—consequently, I presume that, were the fact of a coal deposit established in that locality, the same causes that have prevented the *Palamow* mines from being worked, would also operate here, and on account of its distance from the Ganges at *Chunar* and *Mirzapore*, in a still greater degree, so as utterly to preclude all idea of the same being brought to advantageous account.

48. The specimens of coal, which I collected during my last search, amount in the aggregate to about 16 pounds; they were found lying on the sands of the *Soane*, between *Silpee* and *Burdee*, a distance of more than 30 miles; the fragments vary in weight, from a few grains to pieces of three or four ounces, and they all present the appearance of having been washed from a distance: those marked E, were collected in my last examination.

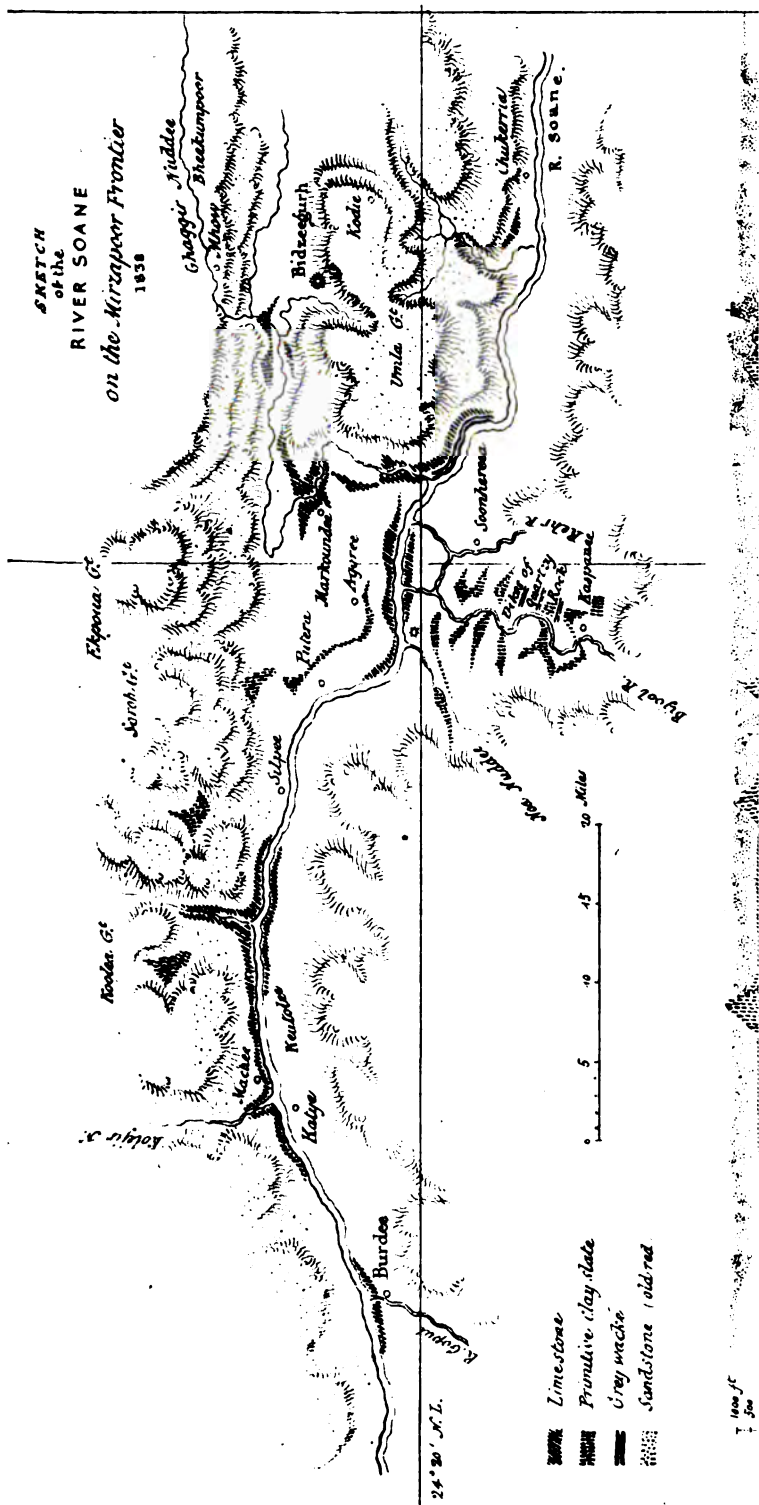
49. My time having now once more expired, I was most reluctantly compelled to relinquish all further inquiry; before, however, returning to *Chunar*, I dispatched by a sure conveyance, copies of the offer of reward to *Burdee*, and the principal villages in that direction on the *Soane*; and if a coal formation does exist in any part of the country thus lately examined, I feel assured that it will not be long before its discovery is reported to the authorities at *Mirzapore*.

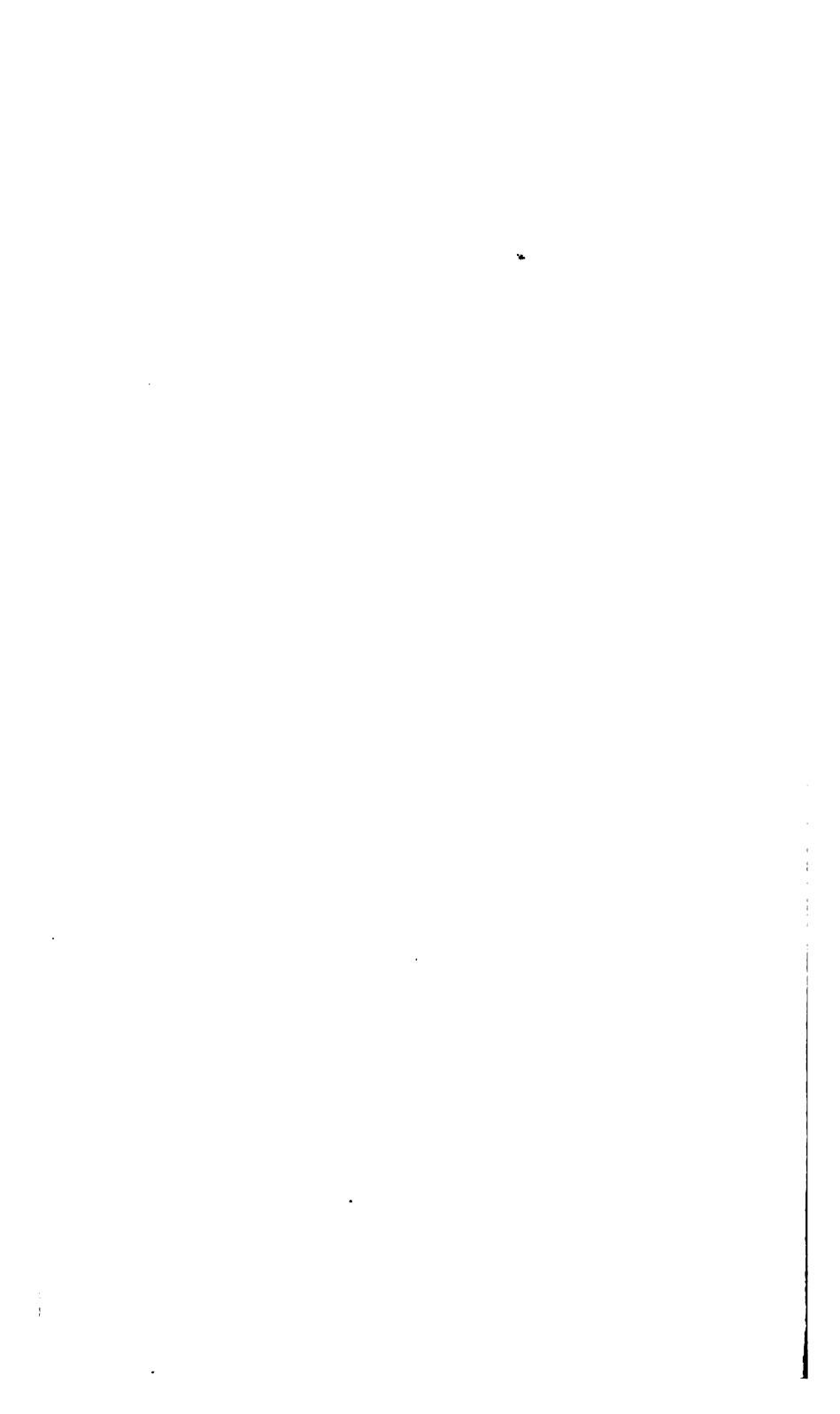
50. In conclusion, I beg leave to apologize for all defects which on perusal may be found in the preceding report: the attempts at geological inferences, are given with the utmost possible deference. In this branch of science I have had but little experience—in fact it is with much hesitation I have ventured at all on the subject. On second thoughts, however, I deemed it best, even at the risk of error, to give the facts just as they were impressed on my mind, and in so doing I trust I may not have materially erred. My important opium duties have left me but little leisure, even supposing I possessed the ability—to prepare an elaborate report: the foregoing is consequently written in great haste, and hence I more readily venture to hope, that all imperfections may meet with the most indulgent consideration.

II.—Report on ten specimens of Coal from Captain BURNES.

Although on a general inspection of the specimens contained in Captain BURNES's despatch, some disappointment is felt at not finding any, which may be at once pronounced to be ordinary working coal, such as occurs in abundance in England, and is obtained in *Bardwan*, *Assam*, and other parts of India, still there is enough among them to encourage hopes, of finding coal in profitable beds in the vicinity of the *Indus*, when more carefully explored.

Four of the specimens are in fact of the very purest form of mineral coal,—that in which all vegetable appearance is lost, and a semi-crystalline homogeneous structure supervenes, the result apparently of fusion under heavy pressure and confinement.





This *jet*, or pitch coal, were it found in sufficient quantities, would not only answer well as a fuel, but would be superior to all other coals for the particular object of getting up steam, on account of the large proportion of inflammable gas it disengages under combustion.

Of this description are Nos. 1, 2 and 3 from the neighbourhood of *Kalabagh*, and No. 10 from the northwest of *Dera Ismael Khan*. Captain BURNES says that the former "was found in abundance"—and that the latter "should it prove a good coal, will be invaluable,—being in the neighbourhood of the *Indus*, and in a country where the poverty of the people will make them rejoice to discover any means of improving their condition."

Of the excellence of the coal there can be no doubt; there is I fear less certainty of its abundance. It occurs in very thin seams, which will not pay for the working if they lie in a hard rock, but if seams even of a few feet thickness are met with, Captain BURNES's anticipations will be amply fulfilled. The pitch coal of *Mergui* which closely assimilates in chemical composition with the *Indus jet*, is stated by Dr. HELFER to lie in a bed six feet thick, whereas the other is barely an inch thick, and the veins, and natural cleavages, are every where filled up with calcareous spar.

No. 5, the bituminous shale of *Cohát*, was examined by me in 1833; it is not at all adapted for burning in steamers, though, from the quantity of gaseous matter expelled, it might be turned to account, in default of better fuel, on shore. The same remark will apply with more force to No. 7, a bituminous limestone, in which the slaty structure is not perceptible.

The existence of large rocky formations, so strongly impregnated with naphtha and bitumen, is indeed evidence of the proximity of coal beds, from which, by the action of volcanic heat, we may suppose the volatile matter to be forced into the porous superincumbent strata. In *Assam*, where so many beds of rich lignite and pitch coal, not differing in composition from the jet of *Kalabagh*, have been lately found, springs of naphtha are common, and were known long previous to the discovery of the coal.

To a similar origin may be traced the bituminous exudations from rocks in the *Panjáb* and *Cabul*, of which we have examples in No. 6 and No. 8. The former of these may be called a bituminous brine, for it contains a large proportion of common salt, attributable doubtless to the rock-salt deposits of the same range of hills.

Another bituminous exudation from near *Ghazni*, given to me by

SHEKH KERA'MAT ALI, and called *mumia*, was found by Mr. PIDDINGTON to contain nitrous salts, sulphur, and bitumen.

Of a similar nature may be the combustible No. 8, from the north of *Cabul*, but I have as yet only examined it as a combustible.

I now proceed to the detailed examination of each specimen, adding, for convenience, the remarks of Captain BURNES, as to their locality. I have also placed at the foot of the list the muster lately received from Captain WADE, Political Agent at *Loodiana*. I have deposited a small fragment of each kind, in sealed bottles, in the Asiatic Society's museum, for preservation.

J. PRINSEP, *Assay Master*.

Specimen 1.—"From *Shakandara* near *Kalabagh*, about 15 miles from the *Indus* found in abundance half way up a hill two miles north of the village."

A fine jet or pitch coal: of a glossy velvet black color; does not soil; may be cut and worked; fracture conchoidal and vitreous:—has a slight asphaltic smell. The fragments coated with an earthy matter easily washed off. Specific gravity 1.166; burns with rich flame and copious scintillations. 'Composition as a fuel—

| | |
|-----------------------|-------|
| Volatile matter,..... | 50.9 |
| Carbon or coke,..... | 47.5 |
| Earthy residue,..... | 1.6 |
| | <hr/> |
| | 100.0 |

Specimen 2.—"From another locality of the *Shakandara* deposit, at the base of the hill among sandstone."

This is precisely the same jet as above described, but many of the small fragments have the sandy matrix adhering, hence on an average specimen *uncleaned* the result was: specific gravity 1.454.

| | |
|------------------------------------|-------|
| Composition—Volatile matter, | 34.3 |
| Carbon, | 18.7 |
| Earthy matter,..... | 47.0 |
| | <hr/> |
| | 100.0 |

Specimen 3.—"Coal of *Kalabagh*, found three miles south of *Shakandara*, and nearer *Kalabagh*, in a fissure of the rock, to be seen in three different places off the high road."—B.

This is more of a coal (or rather lignite) than either of the preceding. It shews the woody fibre, and the alternation of glistening

bituminous, with dull carbonaceous seams. It burns with much scintillation, and poor flame:—specific gravity 1.470 to 1.556?

| | |
|-----------------------------------|-------|
| Composition—Volatile matter,..... | 42.8 |
| (of which water 7.6) | |
| Carbon,..... | 47.6 |
| Earthy residue, ferruginous, | 9.6 |
| | <hr/> |
| | 100.0 |

Specimen 4.—"Coal of *Mukud*. The locality of this specimen is not well authenticated. The three preceding were dug out, but this was brought in, as was said, from *Mukud*."

Highly vitreous jet, of a more resplendent velvet gloss than the foregoing. Seam of carbonate of lime adhering to one corner: burns with richer flame, and slight sparkling:—water given off on sandbath only 2.7 per cent.:—specific gravity 1.122, being the lightest of the series, and approaching closely to pure asphaltum, but it does not fuse, when heated, before ignition, nor is it readily, if at all, soluble in naphtha, even when boiling.

| | |
|------------------------------------|-------|
| Composition—Volatile matter, | 63.6 |
| Carbon,..... | 32.8 |
| Earthy matter, ferruginous, | 3.6 |
| | <hr/> |
| | 100.0 |

Specimen 5.—"Kohát coal, similar to that sent down in 1833; locality *Laches, Kurpa, Jutta* and *Ismael Khyt*."—B.

Dull earthy bituminous shale, burns with good flame, and leaves slaty ash. Specific gravity 1.619. The specimen analyzed in 1833 (see *Journ. As. Soc.* vol. II.) had a somewhat higher weight, 1.670. I place the two results side by side.

| | 1833 Specimen. | | 8838 Specimen. |
|-----------------------|----------------|-------|----------------|
| Volatile matter,..... | 37.0 | | 3.04 |
| Carbon,..... | 6.2 | | 14.9 |
| Earthy matter, | 56.8 | | 54.7 |
| | <hr/> | | <hr/> |
| | 100.0 | | 100.0 |

Specimen 6.—"Coal of *Soorkh-áb*, 15 miles S. S. E. of the city of *Kabul*, near *Moosye*. It is called '*Khur*' by the learned: there are two kinds as may be seen by the specimens. There are copper mines near it."—B.

This is a curious substance—a saline earth resembling wacken in appearance, strongly impregnated with bitumen, or mineral oil; of a strong smell, saline taste, and deliquescent from the salt it contains—whence probably its name of '*khur*' (*kshôra salt*). It has a specific gravity 1.851—and burns with a good flame.

Composition (in the dry way)—

| | |
|---|-------|
| Volatile matter, | 27.3 |
| Carbon, | 16.9 |
| Earthy matter, partly calcareous, and salt, | 55.8 |
| | <hr/> |
| | 100.0 |

(I have not yet analyzed this as to its saline contents.)

Specimen 7.—"Coal from *Nour*, 10 miles north of the ancient city of *Ghazni*. The specific gravity is higher than that of all the foregoing."—B.

This is a bituminous limestone, smelling of naphtha when rubbed or freshly broken—leaves a mark on paper, and burns with a poor flame, when well heated. Specific gravity 2.056. Analysed in the ordinary manner it gives off—

| | |
|---|------|
| Volatile matter, | 12.9 |
| Carbon, | 32.2 |
| Earthy matter chiefly calcareous, | 54.9 |

100.0

As, in driving off the volatile matter, or incinerating the carbonaceous, it is evident that some, if not all, of the carbonic acid would be disengaged from the lime, I repeated the trial, but with results nearly the same. The earthy residue 54.9 digested in weak nitric acid, left but 1.5 undissolved: the 53.4—(or in the second experiment 50.5) of lime, would require 41.0 or 39.0 of carbonic acid for its neutralization, or more than the carbon and bitumen together! We can only suppose therefore, that the presence of the bitumen had prevented the absorption of carbonic acid, or supplied its place—a fact it will be worth while to ascertain, when I can get another, and a larger specimen.

Specimen 8.—"From *Nujrow* to the north of *Kabul*. This is a combustible, but not coal, though it may be found to indicate it."—B.

This substance resembles No. 6 in some respects, but it is softer, has a more disagreeable smell, and does not appear to contain salt; it is adhesive, yields to the nail, of dull earthy brown color, specific gravity 2.031; it burns with a clear flame not very bright.

| | |
|--|-------|
| Composition—Volatile matter,..... | 26.1 |
| Carbon,..... | 10.5 |
| Earthy matter, principally
silicious, | 63.4 |
| | <hr/> |
| | 100.0 |

A further supply of this curious matter for a more rigid examination, and information as to, manner in which it occurs, would be desirable.

Specimen 9.—"Coal of *Jamoo* in the *Panjáb*: this was brought to me from *Umritsir*, and if it proves good, the locality of it, as being close to the *Chenáb*, will be nearly as valuable, as if found on the *Indus*."—B.

The specimen of this coal is so minute, that I can hardly put confidence in the trial made on it in my laboratory. It would appear to be a real *anthracite*, having the metallic lustre, and marking paper something like graphite; texture fibrous; smooth: burns with a trifling flame. Specific gravity 1.650.

| | |
|-----------------------------------|-------|
| Composition—Volatile matter,..... | 8.8 |
| Carbon, | 57.2 |
| Ferruginous earth,..... | 34.0 |
| | <hr/> |
| | 100.0 |

This coal would be quite unfit for steam purposes, but if there be beds of anthracite on the *Chenáb*, this material may be turned to very good account in the smelting of iron, now that the application of the hot blast has been introduced. It seems that one part of the anthracite coal of *Wales* produces four times the effect of the best coal formerly used.

Specimen 10.—(Forwarded 8th March.)

"The locality of this deposit is between *Tak* and *Kaneegorum*, northwest of *Dera Ismael Khan* in the country of the *Masood Wazirís*. It is found one and a half coss east of the small village of *Luogarkhyl* under the *Mulik Buda*. The seam has been laid bare by a water-course, and may be traced up hill, it is said, for 100 guj (112 yards)—dividing, as it ascends, into two parts, and having stones impregnated with iron on both sides. The exposed part of the vein is narrow."—B.

This is the most promising of all the specimens:—in quality it agrees with Nos. 1, 2 and 3, being a rich jet, or pitch coal. The division of the fragments, is generally rhomboidal, and a thin coating of crystalline veins, which pervade the crevices, conceals the splendour

of the polish, but it is developed by a little acid, or washing. Some fragments have a flat striated structure like lignite; these are less bright in color, and heavier; they burn with copious flame, and some emission of sparks. The water given out on the sandheat, is 3.5 in the first and 5.4 in the second sort.

| Specific gravity No. 1, | | of No. 2 | |
|-------------------------------|-------------|----------|-------------|
| 1.227 | | 1.481 | |
| Composition—Volatile matter, | 49.1 | | 48.6 |
| Carbon,..... | 48.5 | | 45.3 |
| Earthy matter, ferruginous,.. | 2.4 | | 6.1 |
| | <hr/> 100.0 | | <hr/> 100.0 |

Specimen 11.—Stated in the letter accompanying it to have been “found in the *Mandi* hills north of the *Sutlej*, by Captain WADE, Political Agent at *Loodiana*.”

The tin box, on arrival, was found to contain fragments of coal, and some large nodules of iron pyrites, the hardness of which had shattered most of the coal to atoms on its way down. Some pieces, however, were picked out, which had a very promising appearance, more resembling the *Burdwan* coal than any of the above. Some pieces, however, were attached to black silicified, or fossil, wood, which at first sight might be mistaken for excellent coal. It had a sulphurous smell from the pyrites, and from the analysis I fear it is much adulterated with this mineral. From its aqueous contents, 7.8 per cent., it scintillates a good deal in burning, and the flame is peculiarly coloured from the presence of metals.

The specific gravity is 1.580 and the composition of a selected piece,

| | |
|---|-------------|
| Volatile matter,..... | 48.1 |
| Carbon,..... | 39.3 |
| Ferruginous residue from the
pyrites ? | 12.6 |
| | <hr/> 100.0 |

More information will be desirable regarding this *Sutlej* coal, which promises to be a valuable addition to our now extended catalogue of Indian coal deposits: but its locality at *Mandi*, is too far from the limits of navigation, to allow of its being brought practically into use.

J. PRINSEP, *Assay Master*.

III.—*Note on the Animal productions of the Tenasserim Provinces ; read at the meeting of the 10th October, 1838. By J. W. HELFER, Esq. M. D.*

Eighteen months have elapsed, since I last had the honor to address personally the Society. Since that time, I have wandered over many hundreds of miles, never trodden by Europeans, in countries left to the unbounded operations of nature, in a latitude, which produces all that is created, and, of the vegetable world, mostly in perfection and exuberance, and in tracts, where, in the recesses of the interior wilds, many productions await yet the ardour of naturalists, to bring them forth to everlasting knowledge.

Having to-day the honor to submit the ornithological part of my collections to the Society's inspection, I avail myself of the opportunity, to take a cursory view of the animal productions of the Tenasserim Provinces ; and as man occupies the highest rank in that series, I may be allowed to begin with the different races inhabiting these regions—speaking of man however, only as a naturalist, who describes the habits and manners of the human species, and considering the varieties of it in the different nations and tribes, and the striking peculiarities that are found, with reference to the geographical distribution of each.

The inhabitants may be subdivided into the Burmese, the Siamese, and the Kareans. All three belong, generally speaking, to the Mongolian race, but are so changed, and specifically distinguished, that they form separate races.

The Siamese approach nearest to the Chinese, possessing a flat forehead, a small nose, prominent cheek-bones, black hair, very thin beards, small oblique eyes, thick lips, and a colour more or less yellow. The Burmese are half Malays half Chinese ; the Kareans half Malays half Caucasian, indeed the features of the latter approach so much the Caucasian form, that many of them have even aquiline noses, a high forehead, and the European facial angle. Consequently the idea, latterly followed up by the American Baptist Missionaries with great zeal, sometimes with ridiculous obstinacy, namely, that they are the true lost tribes of the Jews, merits, as far as regards their physiognomy at least, an excuse.

The Kareans are in civilisation the lowest of the inhabitants, and exhibit an anomaly, which is perhaps no where else found. They are an agricultural people without any fixed habitations, but migrating every second or third year ; and so great is their innate love of the

primitive forests, that they hate their own industry, are disgusted with cleared land, pity men who are surrounded by smiling and well dressed cultivation, can seldom be induced to visit towns on the sea coast, and return invariably from thence, as soon as possible, to their secluded mountain valleys, leading the life of hermits, content with the almost spontaneously growing productions of nature, despising the possession of money, because not desirous to exchange their own productions, and, in consequence, not desirous to add to what we call comforts.

The Kareans seem to be the aborigines of the country, or the remains of a once numerous people, which has been again reduced to slavery by subsequent conquerors. They are scattered over a great extent of the country, from the 23rd degree of latitude to the 11th, and though conquered many centuries ago, have preserved their language and their peculiarities; for they never have mixed with foreigners, but avoid as much as possible all contact with them, prohibiting even connexions with distant tribes of their own, but intermarrying in their own families, so much so, that matrimonial alliances between brother and sister, or father and daughter, are not uncommon to this day. And this may be the reason that they are a subdued, timid, effeminate, diminishing race; so low in the scale of nations, that they have no written language, no historical, but only religious and poetical traditions, not even the presentiment of a future state; but live, without erecting their head to their Creator, without aspiring to a continuation of their existence.

The second race is the Siamese.

This nation were the former conquerors of the Tenasserim Provinces, but were driven out of the country by *ALOMPRA* in the middle of last century. They are the deadly enemies of the Burmese, formerly living with them in constant feuds, but, since the British occupation, the constantly nourished animosities have ceased, and they have begun to settle in the British territories, and to live peaceably with the Burmese. They are an enterprising industrious race, and possess a great deal of the ingenuity and shrewdness, so peculiar to the Chinese and their descendants.

Their physical development is not stunted, but they are muscular, hardy, and persevering, and are therefore the huntsmen, and the only people who have a knowledge of the vast wilds between *Zim-may* and *Mergui*, going after elephants, rhinoceros, gold-dust and precious stones. They have much of the enterprising spirit of the undaunted adventurer, and are the most capable of improvement.

They are darker than the Burmese, and approach more than the

latter to that prototype, established by GMELIN under the denomination of *Homo-fuscus*.

The Burmese, the third race, and the lords of the land and soil before they were deprived of it, are, comparing their faults and good qualities impartially, an amiable well-behaved race; naturally indolent, self-conceited, and for centuries stationary, but sufficiently civilised to throw off the imputation of being barbarians.

I adhere to the opinion, (consistent with the Mosaic tradition,) that the human species descended from one pair originally; that, in the course of ages, certain distant portions of the globe were first peopled, and that from these, as from many distinct nuclei, mankind dispersed excentrically.

So I think, and history seems to confirm the hypothesis, that from *Java*, *Sumatra*, or *Borneo*, issued the Malayan race; that the Mongols peopling China descended from the high lands of *Kobi*, and that the Indians, originally bred in the Caucasus and its continuations, extended from west to east: and I continue to say, that these three original races, meeting in their courses from south, north and west, in that part of the globe, now called *Indo-China*, gave birth to the nations now inhabiting these regions—that therefore the Burmese are a comparatively recent variety of the human species, the result of Malayan, Chinese and Hindu mixture.

It is here the place to mention that problematical race, which is reported to live in the recesses of the mountain ranges, which, as a spur or a continuation of the great *Himálaya Alps*, run towards the peninsula of Malacca.

I had never the opportunity to ascertain, if this reported race, of the existence of which all the inhabitants in the interior seem to be aware, is one of the numerous varieties of the human species, or belongs to the *Quadrumana*.

If we consider, that close by, on the *Andamans*, there exists a variety of the human species, which justly may be regarded as the lowest in the scale of intellectual beings; and when we are told, that in the south of the peninsula at *Quedu*, lives a similar race of beings, belonging to the Ethiopical type, not much superior in intellect to some of the apes, we might be warranted in concluding, that remains of such a race may yet be found in those vast mountainous tracts, which never have been penetrated by Europeans.

However, the collected, and generally pretty well agreeing, descriptions of the natives cover an extent of five degrees: let me indulge in the conjecture, that these pretended human beings are nothing else

than the gigantic orang-outang of *Sumatra*, or a closely allied species, which has hitherto successfully escaped European detection, and still enjoys the daily diminishing privilege in natural history—to be unknown. In fact since the gigantic animal, whose remains ornament only this museum, was by chance discovered, all vestige of its existence disappeared for many years, until recently Major GREGORY brought two skulls of the same species from *Sumatra*, which clearly demonstrate, that the tales, hitherto believed fabulous, of large human skulls with tiger-teeth, have not been altogether unfounded, not as the relics of a rational being, but as the uniting link between man and beast.

Coming now to the *Mammalia*, we find this part of Asia participating in the variety of species, which distinguishes one side of that continent, and in the magnitude of those on the other side. It exhibits nevertheless the distinguishing particulars, which separate all Asia from New Holland, and from the islands of the Pacific Ocean.

In general it may be observed, that the Tenasserim Provinces form a combining line between Hindostan, Indo-China, and the Malayan countries, possessing species peculiar to each of the three divisions, with this distinction, that the number of species in common with Bengal and other parts of Hindostan, is comparatively smaller; that province *Amherst*, and *Ye* possess many species, peculiar to the countries east of the *Burhampootur*, and even several of *Bootan* and *Nepal*, and that the southern provinces embrace many species, which have been hitherto exclusively found only in the Malayan Archipelago.

The *Quadrumana* being every where found within narrower limits, do not present a great variety; some of the species are strictly limited to certain districts.

The *Simia syndactyla* has been found in the southern parts, and can be enumerated as an exception to the general rule; for this animal covers a wide range of congenial country, from *Java* and *Sumatra*, to the 15th degree of north latitude.

A *Hytobates*, though the most common species in the interior, howling most pitiously in the solitary forests, seems to have hitherto escaped the observation of naturalists.

The *Symenopithecus Maurus* is a very wild inhabitant of the loftiest trees, and considered the best food by the Kareans, by whom it is shot with poisoned arrows.

The *Cercopithecus Cynosurus* inhabits chiefly the banks of rivers, and the mangrove forests, being chiefly fond of shellfish.

Another species of *Cercopithecus* belongs to the rarest of this genus, and is found chiefly in the northern parts, upon isolated limestone rocks.

The *Cheiroptera* present a great variety; and several, I imagine, not yet described species are to be met with, chiefly of the genus *Nyctinomus*, *Phyllostomus* and *Pteropus*. Amongst the rarer species *Vespertilio Temminckii* and *Pteropus Javanicus* must be enumerated.

The *Carnivora* present a great number of species. To maintain the equilibrium in nature, it is also necessary, that where so many species are procreated unmolested by man, the number of rapacious animals must increase.

Of the *Plantigradae* the *Ursus Malayanus* seems to occupy all the mountain parts, as high up as the 13th degree of latitude.

It must be observed that the genus *Canis* has, so far as I know, no representative in the countries, trans-*Burhampootur*; this genus, which possesses in Hindostan several interesting and particular species, seems to become obsolete, even the common jackal does not prosper in *Indo-China*, and not one specimen is to be found in Tenasserim. Yet there are several species of *Viverra*, and one *Herpestes*.

In the same ratio as the number of species of *Canis* diminishes, the number of the species of the genus *Felis* increases.

The royal tiger is to be found in great numbers, and is very strong and large; however, its nature is very different from what it is in Bengal; for scarcely an example is known of its attacking men during the day time, and the carelessness, and even contempt, with which the natives treat this formidable animal, is truly astonishing.

At *Tavoy* the black tiger, the *Felis Nelao*, is not uncommon, and a specimen was caught last year, but unfortunately on its transport to *Maulmain*, it broke through the bamboo cage, and escaped.

I pass quickly over the *Marsupialia*, and the greatest part of the *Rodentia* in this cursory sketch; the genus *Sciurus* presents a considerable number of species, and of *Pteromys*, I found a large, and probably undescribed species.

Of the *Edentata*, the little *Bradypus* has been caught, and so also the *Manis Crassicaudata*.

Coming to the *Pachydermata*, I can not omit to mention the number of elephants, which wander in herds of 10 to 30, through the uninhabited tracts, having the wide extent of primitive forests, from the bay of Bengal to the Chinese seas, open to their constant peregrinations, descending during the monsoon into the plains, and returning into the mountains during the hot weather.

The hog is very common, and the *Sus Barbyrussa* not very rare.

The rhinoceros is a common animal throughout the provinces, and perhaps more numerous than the elephant, though its less gregarious

manners, and its wilder character, do not admit an easy approach to it.

The Tenasserim Provinces seem to be a congenial place for this genus, for I dare to pronounce almost positively, that the three known Asiatic species, occur within their range. The *Rhinoceros Indicus* being found in the northern parts of the provinces, in that high range bordering on *Zimmay* called "the elephant tail mountain;" the *R. Sondaicus* of Baron CUVIER, on the contrary, occupies the southernmost parts; while the *R. bicornis Sumatrensis*, or the double-horned species, is to be found throughout the extent of the territories from the 17° to 10° of latitude.

In character the *R. Sondaicus* seems to be the mildest, and can be easily domesticated; the powerful Indian rhinoceros is the shyest, and the double-horned the wildest.

I have had the opportunity to ascertain positively the existence of the *Tapirus Malayanus* within the British boundaries, in latitude 11° 37' in province *Mergui*, though I have not been so fortunate as to obtain a specimen of it. It is well known to the natives who call it the great pig.

Finally coming to the *Ruminantia*, as may be expected, the number of *Cervidæ* is considerable.

Rusa Hippelaphus, *Elaphus Wallichii*, Cuv. *C. Aristotelis*, *C. Axis*, and *C. Muntjac*, besides two other species have been seen; but there is as yet no antelope known.

Of the ox kind, the *Bubalus*, *Arnee* and *Domesticus* are both in a wild state; and of the *Bisons*, the great *Gaurus* rather rare, but *Bison Guodus* very common: besides another small kind of cow, called by the Burmese *Phain*, of which I saw only foot prints, but never the living animal; it remains therefore undecided, to what species it must be referred.

Of birds I have made a collection of 250 species, and 600 specimens, which I herewith place at the disposal of Government, presenting it to-day to the inspection of the Society, and I only regret that economical reasons compelled me to have the birds prepared by the rude hands of common Burmah coolies, previously, a short time instructed by me; and many, otherwise greatly valuable specimens, are therefore more or less defective.

The species inhabiting the provinces are highly interesting to observers of the geographical distribution of the feathered tribe: for they, more than the *Mammalia*, of which the species occupy wider geographical ranges, prove the intimate connexion and resemblance of the lower portions of the provinces with the Malayan archipelago.

More than 60 species found in the southern hemisphere are indigenous, and amongst these is a considerable number of those first described by RAFFLES and HORSFIELD in their accounts of *Sumatra* and *Java*.

Amongst these are to be enumerated *Falco Limetus*, H. St. *Pagrdarum*, TEM. *Strix Castaroptera*, H. *Muscisapa Banyamas* and *Hirundinacea*, Jóra *Scapularis*, *Edolius*, *Puella Crypsirena*, Temma *Vick*, *Brachyptorix montan*, H. *Prinia familiaris*, *Ducelo pulchella* *Eurylaimus*, *Javanensis*, *Eurylaimus tunatus*, GOULD. *Cuculus Xanthorhynchus*, *Parra superciliosa*, &c.

I shall confine the rest of my ornithological observations to very few remarks.

The *Accipitres* are numerous, but as they mostly frequent the gloomy forests, and scarcely accessible cliffs of the mountains, the species are seldom visible, except when soaring high in the heavens, or gliding swiftly over the tops of the lofty trees; many therefore have escaped my observation. The number of *Falconidæ* I collected is 10; of *Strigidæ* five.

The *Passeres* furnish of course that variety, which is to be expected from the great number of species in this order.

The *Hirundinacæ* contain the *H. esculenta*, &c., the nests of which exported into China yield a considerable revenue annually to government.

The family of *Sylviadæ* contains a considerable number of *Taredæ*; seven species of *Pastor* or *Acridotheres*, eight *Muscicupidiæ* and several *Oriolinæ*.

The family of *Fringillidæ* boasts of seven species of *Loxia*.

The *Corvidæ* possess the beautiful *Cypsinina Temmia Velis*.

It is remarkable that the common crow of Calcutta, the *Corv. Doricus* never occurs in the provinces, its place is supplied by the *Corvus Caronæ*, which is equally numerous and impudent.

The *Certhia* possesses a variety of *Cinnyris* and *Nectarinia* yielding in splendid plumage, and diminutive size, little to the American *Trochili*. The beautiful *Dicaeum inver* forms a connecting link with the *Meropida*, which are the glory of the east in richness of plumage, and four species of *Merops* rival in colors the species of *Java* and New Holland.

Halcyon and *Alcedo* of the nine species that exist, amongst which the *Halcyon Gurial*, an Indian species, takes the lead in size and noise.

The family of *Buceros* contains four representatives, amongst which the small *Buceros Malabaricus* of LATH. is the most common.

The Indian *Homrai* is equally an inhabitant of Tenasserim, besides two or three beautiful species, which I do not find any where described.

Of the order *Scansores*, the *Picus*, or wood-peckers are numerous and beautiful, and I found nine different species. *Picus Bengalensis* showing the affinity with India, and the closely allied *Picus Tiga* of HORSFIELD with Java.

The *Cuculidæ* are numerous. Of *Phoenicophæus*, there are three species of small *Cerulis*; the *Centrophus Castaropterus* is one of the commonest inhabitants near human abode.

The genus *Bucco* contains five species, of which two appear to be new.

The *Psittacidæ* have five representatives, amongst which the small *Portrams preporsitis* is the great destroyer of duria blossoms.

The next order are the *Gallinacæ*.

The family of *Columbidæ* possess, as far as I am aware, seven species, of which four belong to the genus *Vinago*.

The splendid *Geophilus Nicobarensis* is an ornament of the Islands constituting the *Mergui* archipelago.

The *Tetraonidæ* possess few representatives, the whole country being an uninterrupted forest, and these animals liking bare rocky grounds, pasturage fields, and meadows. Only one species of *Perdrix*, and two species of *Coturnix* have been observed by me.

The *Phasianidæ* possess the *Ph. Gallus*, or the father of our domestic fowl, in great abundance in the jungles; and the breed, amongst the natives, is commonly kept up by supplies of eggs from the forests.

Of the *Pavonidæ*, the Indian peacock is in great abundance in the interior near mountain torrents.

The *Grallæ*.—Of the *Charadriadæ*, three species of *Charadri* amongst which, the Indian *Ch. ventralis*! of GENL. HARDWICKE, and the *Gloriola* or *Entalis* of LEACH.

The family of *Ardeadæ*, possesses many representatives. The *Ciconia Argala*, or the common Calcutta adjutant, is never seen on that coast, and the existence of a substitute in the *C. capillata* of TEMMINCK, or the adjutant without pouch, reminds us again, that the provinces approach more to Java than to Hindostan.

The genera *Grus* and *Ardea*, possess 11 species of which the *Ardea Malauensis* of GMELIN is the most common.

The family of *Fringellidæ* have a due number of species, *Numenius*, *Scolopax*, *Totanus*, *Rhynchus*, *Limosa*, *Tringa* and *Hemantopus* are found, and have their residence chiefly near the mouths of the numerous rivers, descending from the mountains, as far as they are exposed to the influence of the tides.

Of the *Rallidæ* I can only enumerate the *Parra Superciliosa*, and two species of *Ortesgometra*.

Finally ending with the *Palmiperæ*, we have one species of *Pelicanus* so widely spread over the east, and four species of *Carbo*, which have taken up their residence upon the great rivers.

To render the enumeration complete, I have only to mention four species of *Sterna*, and of the *Anatinæ*, the *Anser Girra* of India, the *Mareca Anser* and another unknown species.

Having thus completed the enumeration of observed animals I have only to add, as may well be imagined, that the occupation of the provinces by the British, has opened a wide field to the naturalist and philosopher. What I have done has been only to remove the upper veil, which densely covers this much promising land; but the result of my limited researches will, I trust, demonstrate that success and a rich harvest must await every one who investigates the country with leisure, *con gusto et amore*, confining himself to certain definite branches; and I will only add that I shall be most happy to submit to the Society further additions and more information, which, I hope, I shall be able to gather in future.

IV.—On a new species of Pheasant from Tibet. By B. H. HODGSON, Esq.

The zoological region comprising *Tibet*, with the lofty mountains which bound it towards India and China, is chiefly distinguished in the bird department, by the number of its pheasants, (*Phasianidæ*,) hardly any two of which agree in form and external organisation. This rich variety of structure, whilst it mocks all past attempts at systematic arrangement, seems to indicate, that we yet possess, in this family, but the fragment of the complete circle, (termed *Phasianidæ* by VIGORS and *Pavonidæ* by SWAINSON,) though the riches of recent discovery, may induce us to hope, that the deficient forms are not extinct, but only unknown.

Be that as it may, there is at least no doubt, that in the present state of the scientific classification of this family of the *Rasores*, an insulated observer cannot well hope to class newly discovered species satisfactorily; and I shall therefore at once proceed to the summary description of what I believe to be such, without any present attempt to decide, whether my bird be an aberrant species, or a new type in the family.

Phasianide, vel *Pavonide*.

Genus—new? *Crossoptilon**, nob. Type *Phasianus Crossoptilon*, nob. Hab. Tibet.

I possess but one specimen of this large and striking bird. It is a mature male, and was brought recently to *Cathmandu* by the Nepalese envoy to *Pekin*, who has just returned here. The length, from the tip of the bill to the tip of the tail, is from 38 to 40 inches, of which the bill is $1\frac{1}{2}$ and the tail 19 to 20 inches.

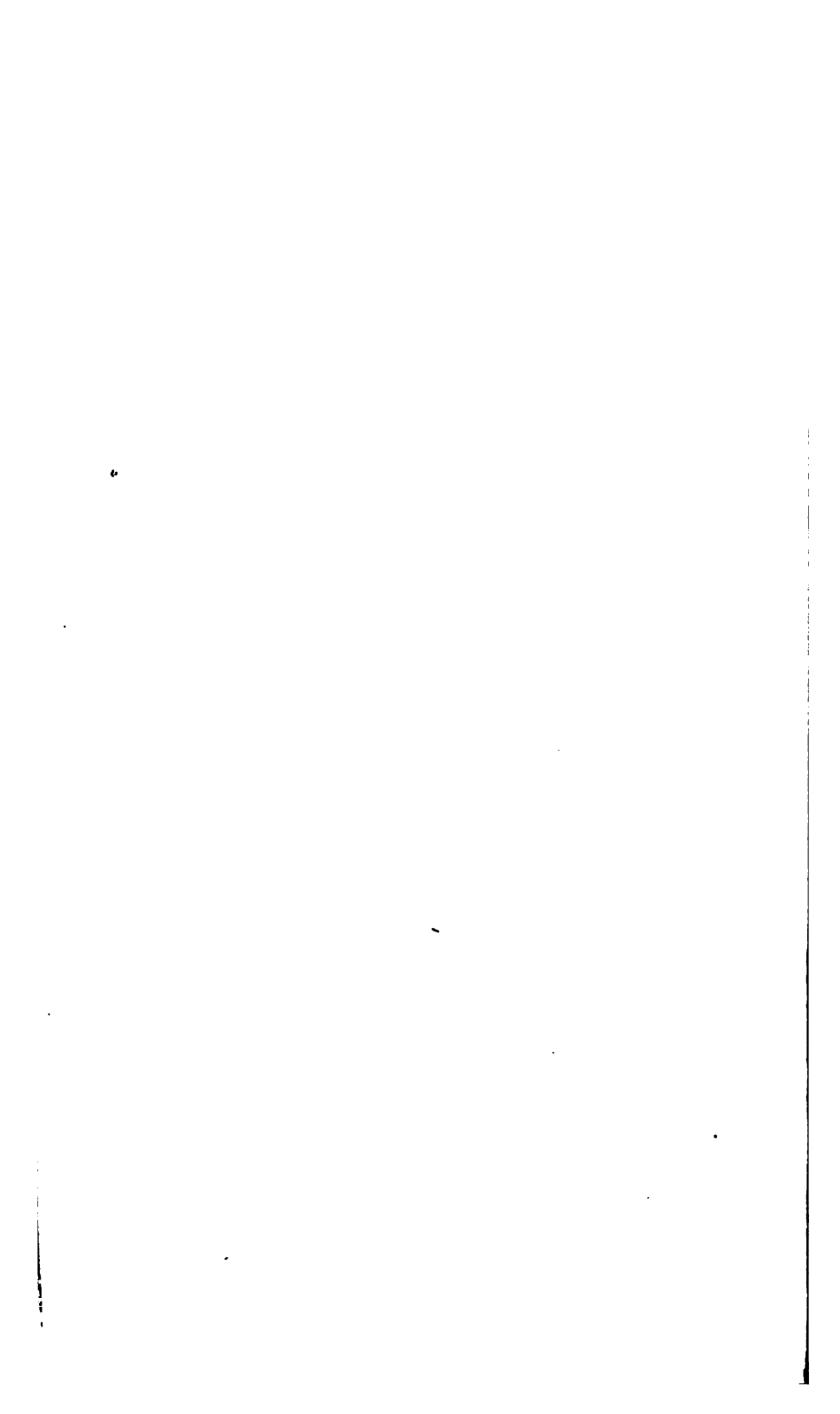
A closed wing measures $12\frac{1}{2}$ inches; the tarsus $4\frac{1}{2}$, and the central toe $2\frac{1}{2}$. The bill has the same length, whether taken from the gape or from the front, and is three-eighths of an inch shorter than the head, the latter being two inches complete. The bill is very strong, with the general characters of that of *Lophophorus*, the tomial edge of the upper mandible being even more scarped, and furnished with a small tooth-like festoon. Its base is nude. The head and throat are clad in feathers and simple. But the entire cheeks, from nostril to occiput, are void of plumes, being occupied by the typical red and papillated skin of the pheasant tribe, and in all that extent of development, which more especially characterises the Indian *Káliches* (*Leucomelanus*), and the painted and *Amherstian* species of China. Like the true pheasant (*Colchicus*), our bird has no crest of any kind, though the feathers occupying the top of the head are of a peculiar kind, being short, velvety, thickset, erect, with their slightly discomposed and square points recurved a little to the front.

The wings have no peculiarity. They are short, stiff, bowed and rounded, as usual the sixth feather being the longest. The very ample tail is most remarkable for the breadth of the plumes. Its length is moderate, nor is there any of the extra elongation and narrowing of the central feathers, which characterise the tropical pheasants. There are 18 caudal plumes regularly and considerably gradated throughout, and the general form of the tail is broadly convex, without any symptom of the Galline compression and curve. The legs and feet are well adapted for rapid movement on the ground, and have a form and proportion, very similar to those of *Leucomelanus*, and *Satyrus*. The tarsi are nude, and biscaled before and behind: but the hinder scales are smaller than the fore ones. The sides of the tarsi are papillo-reticulate. The spur is sharp and curved. The lateral toes are equal; the central long; and the hind short and raised, as usual. The nails are long and possess but little curve. It remains only to notice the plumage of the bird, which constitutes indeed its most

* *κροσσο* a fringe; *πτελον* a feather.



Phasianus ? Crossopilon
Crossopilon whatsoni



remarkable feature. The plumage, then, upon the whole body is very ample, but not at all pointed, unglossed and wholly dishevelled, so as to remind one of the *Struthious* family. This peculiarity has suggested the name I have applied to the bird—a name which, for the present, may be considered specific, but liable to promotion to generic or subgeneric rank, if the form be proved to be typical, and not merely aberrant.

At present I incline to consider it in the former light, and to assign the type a place between *Phasianus* and *Euplocomus*, vel *Nycthemerus*—a type which, by the bye, I characterised 11 years ago in the *Oriental Quarterly*, under the style of *Gallophasis*, assigning the *Kdlich* of KIRKPATRICK's *Nepal* as the *icon*. The oblique compression and curve of the tail constitute the principal character of that type, (*Gallophasis*, vel *Euplocomus*,) and as it is a character sure to be lost in the dry skin, I am not entirely certain, that our present subject may not possess it in the living state. If so, this bird will be a *Gallophasis*, vel *Euplocomus*—but if not, a neighbouring type allied to the true pheasant by the absence of crest, and distinguished amongst all its congeners by its ample fringe-like plumage, the dishevelled quality of which is communicated even to the central tail feathers, the very broad and equal webs of which are quite separated, and curve outwards towards the sides, besides being adorned by a fine gloss.

The general color of our bird is bluish hoary, paler, and tinted yellow on the lower surface: crown of the head black and velvety: great alar and caudal plumes dusky or black, more or less glossed with changeable blue, especially the tail feathers: legs and cheek-piece, intense sanguine: bill dull ochreous red; iris brown.

Nepal, September, 1838.

V.—*Notes of a journey to Girndr in the Province of Kattywdr, for the purpose of copying the ancient inscriptions upon the rock near that place.—Undertaken by order of the Bombay Government.*

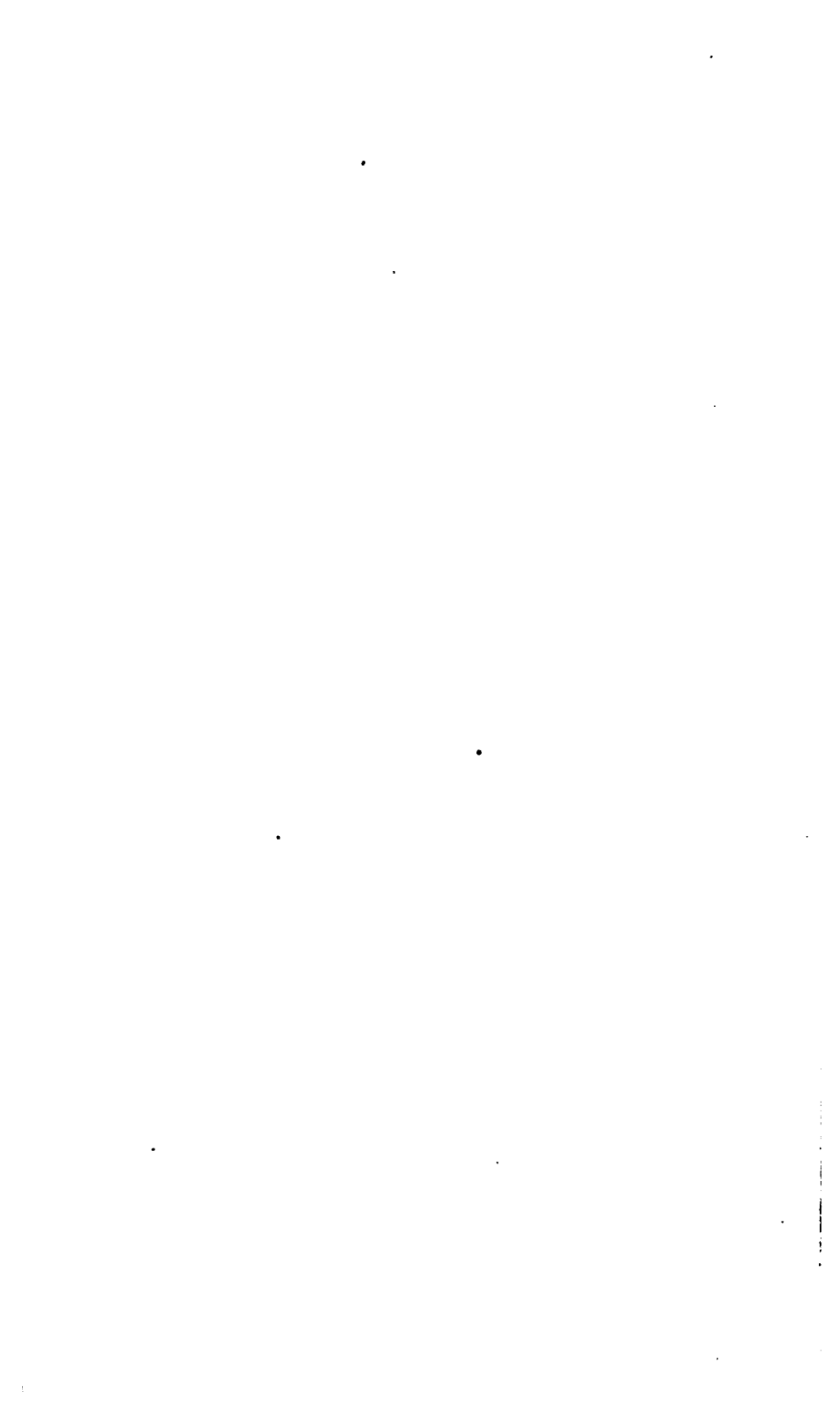
May 10th, 1838.—Landed at the small port of *Verawul* on the western coast, and nearly at the southern extremity of *Kattywdr*. This place is only 40 miles from *Junagarh*, and in the immediate vicinity of the ancient city of *Pattan*, and of the celebrated *Somndth*. Owing to the lateness of the season, and the imperative necessity which existed for my proceeding to the scene of my labours with the least possible delay, my time was not at my own disposal; still I lost none in paying even a

hurried visit to these interesting places. Old *Pattan* is built upon a projection of the main land, forming the southern point of the small port and bay of *Verawul*. The road from the latter to the ancient city, lies immediately on the shore of this bay, and for a distance of about a mile from the walls, on the western side, passes through an extensive Muhammadan burying ground: amongst the tombs are some rich and picturesque ruins. The surrounding country, known as the *Sorath* division of *Kattywar*, subject to the nawáb of *Junagarh*, is exceedingly rich, thickly wooded, and in high cultivation. The walls of *Pattan*, in the form of an irregular square, enclose a space somewhat less than two miles in circumference*, with two gates and numerous square towers. The western front is washed by the sea; a ditch encompasses the other three sides. These fortifications, which are high and composed of uncemented square stones, are of unusual solidity, and the old city, with its massive walls and double gates, must formerly have been a place of considerable strength. The population of *Pattan* is at present completely Muhammadán, and the place is under the management of an Arab jemadar, a deputy of H. H. the nawáb of *Junagarh*. To the kindness of SYUD ABDULLAH, I am indebted for a most hospitable reception, and for every assistance which he could render, or I could require. It is evident that the Muhammadán conquerors of *Pattan*, in rebuilding the place, and substituting a population of their own creed for that of the Hindus, have at the same time laboured to eradicate all traces of the religion of the latter from this city, but the visitor cannot fail to observe the essentially Hindu character of the whole place. The mosques, which are very numerous, appear to have been erected from the ruins of the Hindu temples, whilst the houses, in the ornaments, sculptures, &c., bear about them evidence of their material having frequently been derived from similar sources. The style of building in the gates and walls, the latter adorned at every corner with sculptures of Hindu divinities, proclaim at once to whom *Pattan* was originally indebted for the magnificence, still traceable through all the innovations of its conquerors. This city, as connected with the *Somnath* temple, and the invasion of *Sarashtra* by MAHMUD, is one of considerable interest; and, as the former capital of an extensive country, deserves some inquiry into its early history, but of it, or its rulers, the Persian historians† do not, that I can learn, give any account.

Quitting these subjects, however, I must proceed to describe the renowned *Somnath* temple, the monument of MAHMUD's intolerance, and one of the most interesting relics in the *Sarashtra* peninsula.

* One mile 6 furlongs, 36 square and 2 round towers; walls 9 feet thick.

† MIRAT I AHMADI, MIRAT I ISKUNDURI.





This celebrated shrine occupies an elevated site in the south-western corner of the city, overlooking the sea, and close to the walls. In its present mutilated state, I find it very difficult to convey any very distinct or correct idea of the *Somndth*; for although its original design and gorgeous style of architecture, may still be traced in the complete ruin it presents, its general effect is likely to be better understood from an effect of the pencil, than the pen. (*See Plates, Nos. XLVI. and XLVII.*)

This temple consists of one large hall in an oblong form, from one end of which proceeds a small square chamber or sanctum. The centre of the hall is occupied by a noble dome, over an octagon of eight arches. The remainder of the roof terraced, and supported by numerous pillars. There are three entrances; the sides of the building face to the cardinal points, and the principal entrance is on the eastern side. These doorways are unusually high and wide, in the Egyptian style, decreasing towards the top; they add much to the effect of the building. Internally the whole presents a scene of complete destruction, the pavement is every where covered with heaps of stones, and rubbish, the facings of the walls, capitols of the pillars, in short, every portion possessing any thing approaching to ornament, having been removed or defaced by the "destroyer*." On a pillar, beyond the centre arch, and leading to the sanctum, is an inscription, which, anxious as I was to learn any thing connected with the temple, much excited my curiosity. On translation however, it proved to be merely a record of a certain *sildt*, or mason, who visited the place some 300 years since. I learnt to my inexpressible regret, that an ancient tablet, whose unoccupied niche was pointed out to me, had been removed from the *Somndth* some few years since, by a European visitor. I need hardly quote Col. Tod's remark on this mistaken, and I fear too frequent, practice; but if what he says be applicable to the mere architectural ornaments of a building, how much more so to engraven records, similar to that which is here wanting.

Externally, the whole of the building is most elaborately carved and ornamented, with figures single, and in groups of various dimensions; many of these appear to have been of some size, but so laboriously was the work of mutilation carried on here, that of the larger figures scarcely a trunk has been left, whilst few, even of the most minute, remain uninjured. The front entrance is ornamented with a portico, and surrounded by two slender minarets, ornaments so much in the Muhammadân style, that I doubt if they belonged to the original building†.

* So MAHMUD entitled himself. See FERISHTAH.

† I think it not at all improbable, that these minarets, the dome, and arches in

The two side entrances, which are at some height from the ground, were gained by flights of steps: of these latter the remains only are to be traced. The whole space, for a considerable distance around the temple, is occupied by portions of pillars, stones, and fragments of the original building. Such is a brief sketch of the present appearance of the renowned *Somnāth*, which notwithstanding MAHMUD'S intolerant spoliation, must still prove an object of great interest to the lover of Indian antiquities*. I must not omit to mention, as a proof of the wonderful solidity of this structure, that within a few years its roof was used as a battery for some heavy pieces of ordnance, with which the neighbouring port of *Veraval*, was defended from the pirates who formerly infested this coast.

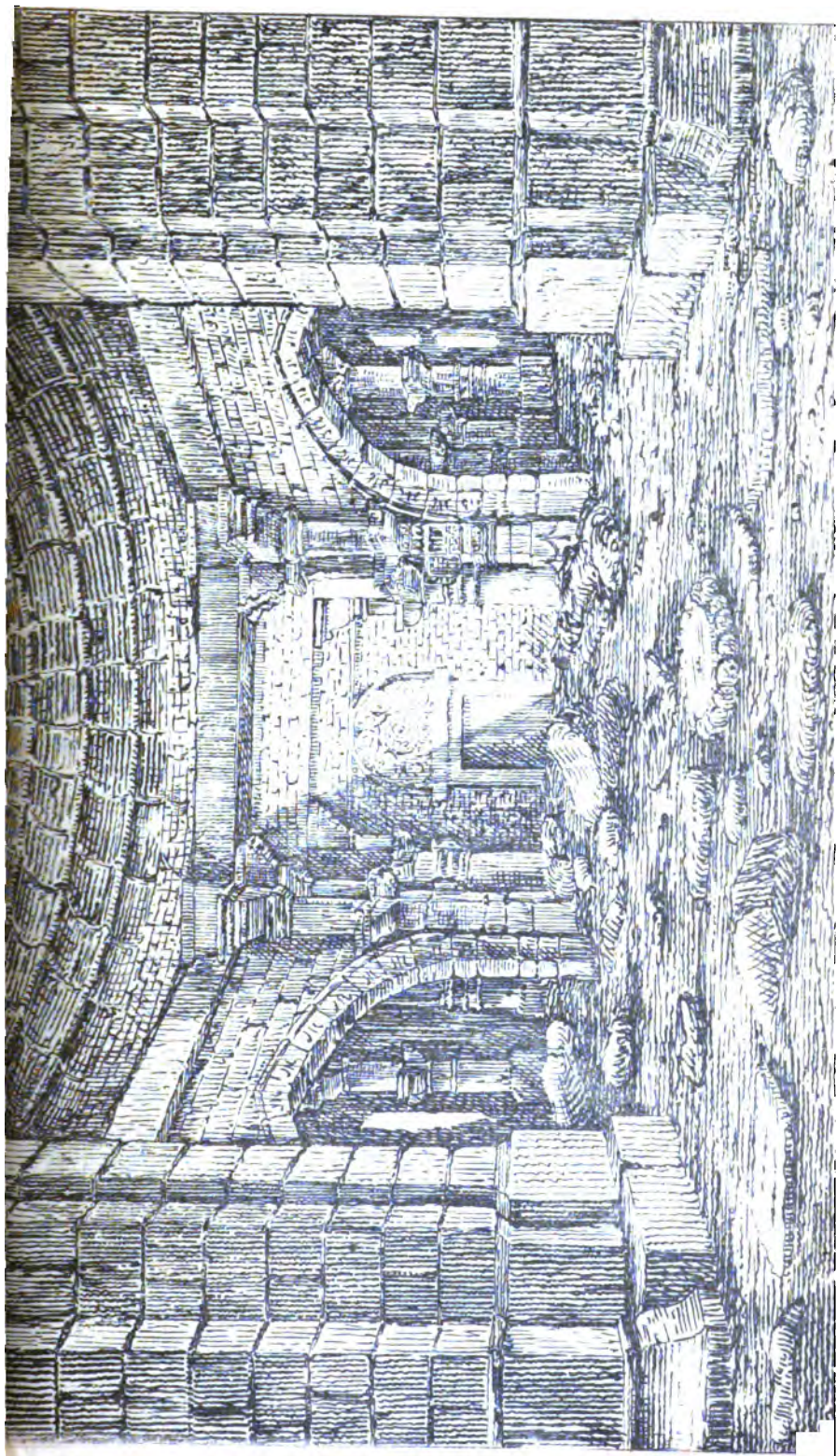
Without pretending to an accurate knowledge of the peculiar features, distinguishing the Buddhistical and Jain from Hindu sanctuaries, my impression, founded simply upon observation, is, that the *Somnāth* was originally a Buddhist temple†, afterwards appropriated to the worship of SIVA; and probably thus found by MAHMUD, at the period of its capture. In confirmation of the Linga having at some period received adoration here, I observed two Nandis outside amongst the ruins: but in its style of architecture and ornament, (particularly the male and female figures,) it is in vain to look for any Hindu features, whilst in all points it agrees most accurately with the Buddhistical. As Dr. WILSON has visited the *Somnāth*, his learning and research in these matters will enable him, if necessary, to judge of the correctness or otherwise of the above remark, which I make with all deference. The modern *Somnāth*, erected by the famous AHLYA BHAI, is in the immediate vicinity of the ancient one, but I had not time to inspect it, as my good friend the jemadar had promised to shew me some curiosities outside the city. On passing through the gate to the eastward, my attention was directed to a stone tablet, about two feet square, in the wall to the right. It contained a closely written inscription in the Dēva Nagri character, and in the Sanskrit language; leaving my pandit to copy this‡, I proceeded on my way.

the interior of the building, may have been added to it after its capture. In the present appearance of the *Somnāth*, it differs widely from FERISHTAH'S description, and these peculiar features, are completely Muhammadan. As BIN CASSIM when he conquered *Sindh*, is said to have turned the temples of the idolaters, into places of prayer for the true believers; so the conqueror of *Pattān* may have shewn his detestation of the idolatry of the *Somnāth*, by attempting to obliterate all traces of the original character of the building.

* Dimensions of the *Somnāth* temple. Extreme length inside not including the small chamber or sanctum, 96 feet; extreme width, 68 feet: extreme height, 23½ feet.

† The *Somnāth* is known to the Jains under the title of *Chandrar Prabhas*.

‡ This has been forwarded to Calcutta for interpretation.





The neighbourhood of *Pattan* is esteemed especially sacred by Hindus, as the scene of KRISHNA's death and apotheosis. After the erection of the great temple at *Dwarka*, it is related that he came to this part of the *Sarasutra*, where, according to the fable, he lost his life from the arrow of his brother VALI. A small river, known to Hindu devotees as the *Raunakshi*, empties itself into the sea, at the distance of about a mile to the eastward of *Pattan*. At a particular spot on this river, sacred as that of KRISHNA's death, are a ghat and a few temples. Pilgrims after a visit to *Dwarka*, come to this stream, where they bathe, and shave the hair from the head and face, in token of mourning. They then proceed to *Prachet* where are some temples (about eight miles up this river): a visit to these concludes a pilgrimage to *Dwarkanath*. In the neighbourhood of the ghât above mentioned, and interspersed through a space of three or four hundred yards in extent, are some excavations, which have all the appearance of Buddhist *viharas*. They consist of a long low and narrow entrance, from which a short flight of steps descends to a small apartment; from this proceeds a gallery leading to another chamber; a succession of three or four chambers and galleries closes the excavation. There are several of these caves, differing little from each other, except that in one or two the galleries continually descend, instead of being on the same level; the last chamber is consequently at a great depth from the entrance. They are all so low and narrow, as to be traversed only in a stooping posture, and in none could I discover the slightest trace of either ornament or idol. The attendant Brahmans at the ghât appear to attach some sanctity to these excavations, and have kept many of them in good repair, with a facing of chunam. Confirmatory of my opinion, that these were originally *viharas*, belonging to some Buddhist establishment in the vicinity, I was fortunate enough to discover near one of them a figure of BU'DH. The face and arms are destroyed, but the sitting posture, crossed legs, and remains of pendants from the ears upon the shoulder, at once decide its character. I subjoin a sketch of this statue*. It is small, the figure, together with a pedestal on which it is sitting, being only four feet high. The pedestal is ornamented with female figures, and the figure itself is supported by a slender pillar, which is broken off just above the head. The whole is framed from one block of a hard description of red stone. There are in the disfigured appearance of this statue, undoubted marks of its antiquity. I questioned the Brahmans on the spot, concerning it and

* The sketch so exactly corresponds with other statues of Budh, that it has not been deemed necessary to have it engraved.

the *viharas*, but they were quite at a loss to account for either; my aversion on principle to remove such relics, alone prevented me from making a prize of this, which unless I have overrated its value, would doubtless form an interesting addition to one of our museums. Still, neglected and unknown where it now is, its presence may prove of great use to some future, and more capable, inquirer into the antiquities of this part of India, which has been designated by Colonel Ton, as "the cradle of Jain and Buddhist worship." After visiting all the *viharas*, and a very pretty though modern Jain temple in their vicinity, I returned to *Pattan*, where the remainder of the day was occupied in taking hurried sketches of the *Somdāth*. I made every inquiry of the few Brahmins to be found in the scanty Hindu population of *Pattan*, for traditions, &c. respecting the temple or city, but I learnt that the only one, whose *chopras* could furnish me with any information on the subject, was absent. For coins I sought in vain, my good friend the jemadar, however, having promised to forward me all that the city can furnish, as well as to procure me some traditions*, I took leave of him with many acknowledgments of the attention he had shown me. I regretted exceedingly, that time did not admit of my making a longer stay at *Pattan*, as well as of my proceeding to the ruins of *Mandore*, *Prachee*, and other interesting places in the neighbourhood. I doubt not they would have well repaid me the trouble of a visit.

May 16th.—Reached *Junagarh*. The whole country passed through from *Veraval* to the capital, is not only the richest, and most productive in *Kattywar*, but may vie in fertility with any part of *Guzerat*. A black soil is watered by numerous streams, whence irrigation is easily carried on, the water being sufficiently near the surface to admit of its being raised by the Persian wheel. This division of the province, consequently suffers comparatively little from the droughts, which too frequently cause devastation and famine in other parts of *Kattywar*; from the continued and abundant supply of water, from these rivulets, the want of rain is not so severely felt as elsewhere. The crops are chiefly sugarcane, wheat, and jowaree, the mango tree flourishes in great luxuriance, and the fruit is excellent. Indeed a stranger would form a most erroneous opinion of the whole province, were he to judge of it in passing through the territories of H. H. the nawāb of *Junagarh*: for the arid and extensive plains, which form the leading features of the *Kattywar* country, are strikingly contrasted with this highly favored division, abounding in hill and dale, wood and water. From the indolence of its ruler however, this fair possession is sadly mismanaged.

* These I received whilst at *Junagarh* and forwarded to Mr. PRINSEP, who will be able to determine their claims to notice.

The approach to *Junagarh* from the southwest is very picturesque, the road for some miles passing through rich topes of mango, tamarind, and other trees : near the city are some gardens in high cultivation. The range, known as the *Junagarh* hills, appears from this direction to run nearly north and west, occupying an extreme extent of about twelve miles. The hills are all of granite formation, but richly clothed with jungle, extending to some miles around their base. The highest point is the summit of the *Gírnár*, situated in the rear of the principal range, to which it is connected by two shoulders or spurs, running westerly, and southerly, from about halfway up the summit. A large opening in nearly the centre of the front range, forms a beautiful valley and road to the sacred mount, which, with its bold granite bluffs, and tapering peaks half hidden in mist and clouds, is a noble feature in the landscape.

The city of *Junagarh* is situated at the entrance of the valley just mentioned, with its low walls nearly hidden by the jungle around ; the only conspicuous object is the old *Rajput* citadel, or as it is called from its elevated situation, the *Uparkót*, a very fine piece of fortification, situated within, and on the eastern side of the modern city. The straggling walls of *Junagarh*, occupy an immense area, not more than half of which is inhabited ; the whole of the eastern portion, is an unoccupied space. The population may be estimated at about 20,000, the majority Hindu ; the streets are narrow and dirty, houses badly built, with nothing about the place approaching to that bustle, and air of prosperity, which might reasonably be looked for in the capital of a rich territory. Situated in the centre of one of the bazars, is the nawáb's palace, an insignificant building ; indeed, with the exception of a few mosques and tombs, none of the modern buildings deserve notice. A very convenient *haveli* has been appropriated by H. H. the nawáb, for the accommodation of officers visiting *Junagarh*. I was thus fortunate in escaping the inconvenience incidental to tents, at a season of the year, when any unnecessary exposure to the intense heat at this place, would perhaps have defeated my object. I had also reason to congratulate myself on meeting Captain LANG at *Junagarh*. Through his exertions, the inscriptions at *Gírnár* were first copied, and to the kind assistance which he on all occasions rendered me, whilst occupied in my work, I feel mainly indebted for any success with which my own exertions have been attended.

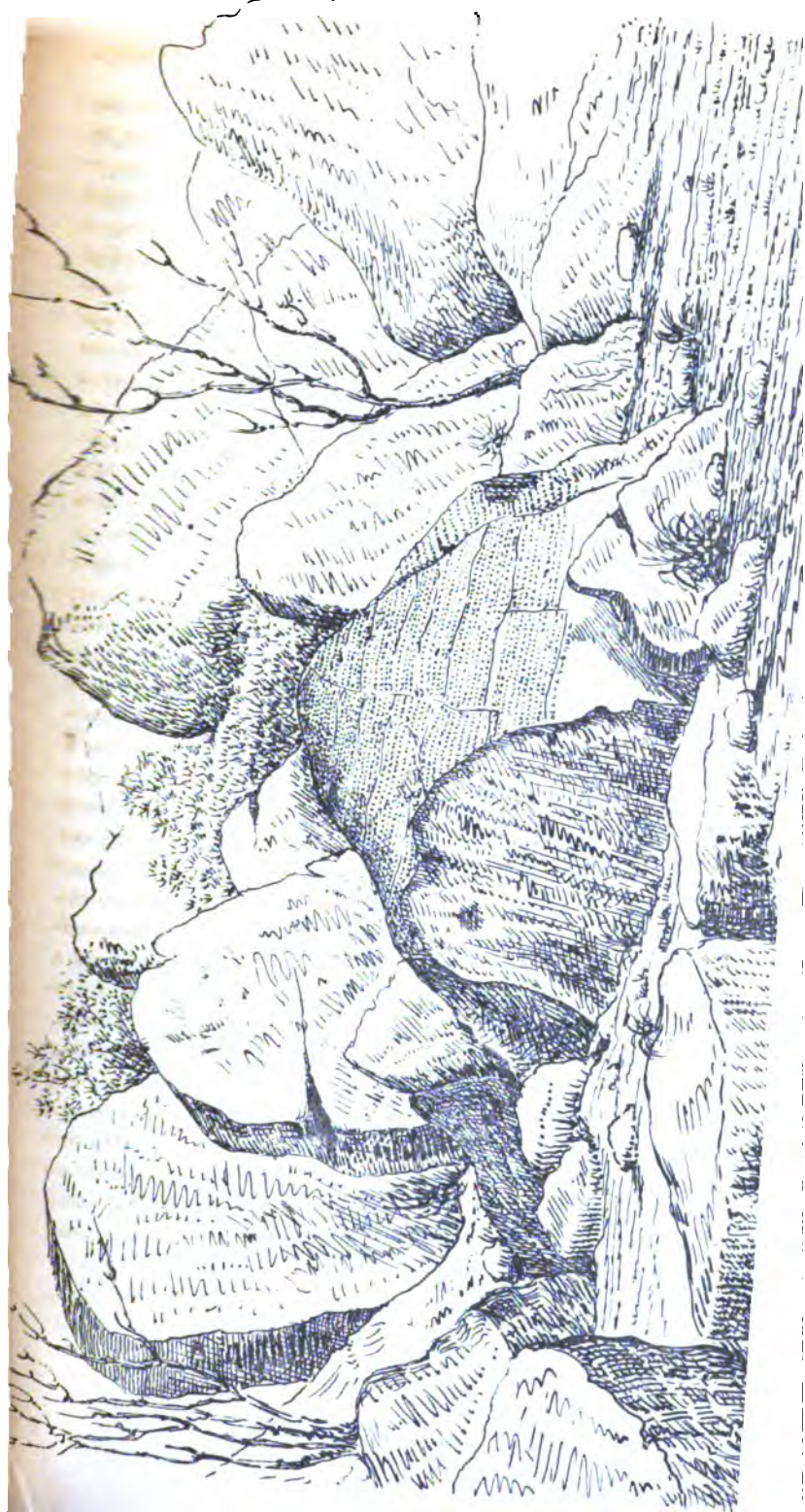
Immediately on my arrival, I accompanied Captain LANG to look at the inscriptions. The celebrated rock, on which they are engraved, is distant about half a mile to the eastward of the city, a few yards to the

right of the *Girnār* road. It is one of a group of several large granite blocks, and appears to have been chosen for its peculiar form, which approaches to that of a flattened cone. The inscriptions occupy three sides of the rock, that to the eastward being the most ancient; whilst those on the western and northern faces, are in a more modern character. The ancient characters, recording the edicts of ASOKA, are deeply cut, and, except where a portion of the stone has been removed by violence, are very perfect. The same remark will also apply to that on the upper western side, but the large inscription on the northern face next to the road, is greatly defaced. The rock here has been much weather-worn, and the characters appear to have been originally faintly cut. A substantial causeway commences immediately opposite the rock, and crossing the ravine at the bottom of the valley, with a neat bridge, terminates near some Hindu temples, and a small but sacred reservoir, called the *Damodar Kūd**. This improvement on the high road to *Girnār*, is the gift of one of the wealthiest of the Soondajee family, and is a noble work. The large portion of the rock, removed from the eastern face, has evidently been the effect of blasting, the materials being in all probability appropriated to the pavement of the causeway.

The survey of my work concluded, preparations were made without loss of time for commencing the copies and facsimiles. Without detailing the result of each day's proceedings whilst occupied in the work, I subjoin a somewhat more detailed account of the inscriptions themselves, with the methods pursued to ensure the necessary correctness in their transcription. The most interesting character is the ancient one, recording the edicts of king ASOKA, and situated as before mentioned, on the eastern face: the letters are each $1\frac{1}{4}$ inches, uniform in size, and very clearly and deeply cut. (No. 4.) This inscription consists of two grand divisions, the edicts being again sub-divided by a longitudinal line between each edict; one line from the summit of the rock to about midway down its face, forms the two great divisions. The space occupied by this inscription is 9 square yards†. Pursuing Capt. LANG's as my first plan, the letters were carefully filled up with a red pigment, (vermilion and oil,) every attention being paid to the inflections, and other minute though important points. A thin and perfectly transparent cloth, was then tightly glued over the whole of one division, and the letters as seen plainly through the cloth, traced upon it in black: in this way all the edicts were transcribed, and the cloth being

* Distance of this causeway 700 yards.

† The rock on the eastern side which is the highest, is 12 feet in perpendicular height, and 74 feet in circumference at the base.



removed, the copy was carefully revised letter by letter with the original. The very smooth and convex surface of the rock on this face, was highly favorable to this method, but it is tedious, and occupied in the old character alone, 10 days of incessant labour. In the next place a correct copy was taken by hand : this proved very useful, as tending to the discovery of any errors, when compared with the copy on the cloth. Thirdly and lastly, the plan, so highly recommended by M. JACQUET, was resorted to, which, when the surface of the rock will admit of it, and the characters are pretty deeply cut and distinct, is unquestionably the most rapid and satisfactory of all the methods yet brought to my notice. The edicts by this method were taken off separately on paper : and, although my first trial, I have reason to think that the facsimiles themselves will show that the result was satisfactory. The inscription on the western side, begins at the summit of the rock, where it is separated only by a small space from the first edict in the old character, and occupies a space of about fifty-six square feet. The shape of the rock is here very irregular, but the character is carved through all the undulations, and in one place several lines are continued over a sharp angle. From the very centre of this inscription, the surface of the rock, in one or two formidable pieces, has been removed, thereby occasioning some very serious hiatuses ; but the lines appear to be individually terminal, and the letters generally clear and well carved. With this character, I pursued only the plan of filling in, and tracing upon cloth, afterwards carefully revising the work, so as to enable me to be satisfied with its correctness. The last inscription on the northern side, is the most faulty of the three ; the letters appear originally to have been very faintly cut, are small, and not uniform in size. The surface of the rock is very irregular, with large fissures, the whole much weather-worn, and mutilated. (No. 5.) No pains were spared to transcribe it on the cloth, and I can only trust, that it will be found as perfect, as under circumstances it could be made. M. JACQUET's plan could not have been applied with any advantage to either of these two inscriptions, in the first owing to the undulatory form of the rock, and in the second from the faintness of the character ; copies by hand would have occupied immense time in this peculiar character ; and the very imperfect state of the northern inscription, would have differed in nothing from the cloth. Some few large and curious tablets occupy the front of a small piece of rock, near the eastern face of the larger one ; there are no other ancient inscriptions at the foot of *Girnar*, or in the neighbourhood of *Junagarh*.

I need not observe, that it became an object of primary interest with Captain LANG and myself, to find some clue to the discovery of the

missing portion of the rock on the eastern side, as the highly important 18th edict, containing the names of *PTOLEMY*, &c., had principally suffered from the mutilation. All our inquiries tended to the conclusion, that the rock had been blasted to furnish materials for the neighbouring causeway: to remove any sufficiently extensive part of the pavement of this, would have been attended with an expense, which I did not feel myself authorized in incurring without authority, but the whole of the soil at the base of the rock, particularly on the eastern side, was turned up to a considerable distance, and as deep as could be gone. In this way numerous small fragments of the original rock were found, confirming our surmises, as to the purpose to which the other portions had been applied*: from these fragments only two had the old, and one a portion of a letter in the modern character upon them.

For any further information respecting this noted rock and monument of antiquity, I must refer to my plans, and rough sketches which accompany these notes; but I cannot help expressing, at the termination of my work upon it, how much I owe to the politeness of H. H. the nawáb, whose hospitality and kindness, during my stay at *Junagarh*, were unbounded; by his direction, an awning was spread over the stone, and an Arab guard was furnished me; in short that assistance was afforded, without which, it is doubtful if I could have proceeded.

Within the walls of *Junagarh*, the *Uparkót* and some excavations at its base, are the only objects of any interest. The old citadel is built upon an elevation of the limestone, which appears to cap over the granite at the base of the hills; and on which the city of *Junagarh* is situated. This is quarried in all directions in the eastern, or unoccupied part of the city, and is so soft as to be easily cut with a hatchet. It hardens however on exposure, and is invariably used as a building material. The *Uparkót* is a noble specimen of eastern fortification, its walls being unusually high, with immense bastions. The materials for these have been taken from a wide and deep ditch, which has been scarp-ed all round it. There is only one gateway and narrow entrance from the westward, guarded by a few sebundees of the nawáb, who, as a matter of form, still keeps the keys of this stronghold. With the exception of a very handsome musjid, which occupies the highest part of the interior, the whole is a mass of ruins, overgrown with a thick jungle of the custard-apple tree: the musjid has suffered much

* We are indebted to H. H. the present nawáb of *Junagarh*, for the preservation of the inscriptions from total destruction, as he interfered to prevent the further mutilation of the stone. The popular belief in the spot is, that the unknown characters refer to immense treasures, buried in the neighbourhood of, or under the rock.





from the earthquake of A. D. 1819, but is still a very magnificent building; its roof affords some fine views: the most splendid is that of the "Mighty Girnár," as seen through the opening in the hills, with the causeway and bridge crossing the ravine in the foreground. In the rear of the masjid is a very curious piece of ordnance, with an Arabic inscription; its material appears to be a composition something like bell-metal; its length is $17\frac{1}{2}$ feet; circumference at the breech 5 feet, this latter quite flat; bore capable of carrying a 12lb. ball. The following is a translation of the inscription on this gun: "SULTAN SULEEMAN BIN SULEEM KHAN ordered the manufacture of this gun, in the year of the H. 937, to the intent, that it should be employed in the destruction of the infidels of Hind. Maker of the gun, MAHOMED BIN HUMZAL of *Miscar*." In another part of the fort is a piece of the same description as the above; but smaller in size. There are also some curious specimens of iron guns: so rude is their construction, that firing them must have been attended with no little danger to the artillery men: they are evidently first efforts in the art of casting. The greatest curiosities in the fort however are two wells, or more correctly, to designate them according to their construction, a *bouree*, and a well or *kooa*: the dimensions of these places which I subjoin, will shew the immense scale on which they are constructed*. The well is square, and lined with masonry for a few feet from the top. An excavation has been made at the distance of about one-third of its depth, where is a bathing place and entrance to a gallery, which descends by steps to the bottom, the light being admitted by large square holes or windows opening into the well. The softness of the stone offers every facility for such a work, and I observed that the strata here dip at an angle of about 30° , with a strike to the north. Owing to the great elevation of the interior of the *Uparkot*, water could not be found but at an immense depth. The *bouree* is nearly circular, and occupies the whole of a large bastion to the eastward. Its interior is lined with solid masonry, and the descent is by a fine flight of steps; these, with a portion of the walls, and the whole of the entrance to the west, are all the remains now traceable of the Rajput possessors of this place, the last of whom, rája MUNDALIK, descended from a line of princes, who it is stated ruled here for 19 centuries, gave up the fort and his throne to MAHMUD BIGARRAHA, H. 877, A. D. 1472†. I was fortunate in discovering a

* Depth of well, 180 feet, 37 feet square. Ditto of *Bouree*, 96 ditto. Circumference ditto, 74 ditto. Length of descent to ditto, 240 ditto.

† For a detailed account of the capture of this place, conversion of the rája to the Muhammadan religion, &c., see the *Mirát-i Iskandari*; the following extract from

tablet in the wall, in the interior of the fort, which contains an edict by this rāja MUNDALIK, dated S. 1507, A. D. 1451. It reminded me much of the noted ones by king ASOKA, since it contains an order that every 11th day shall be considered sacred, coupled with injunctions against the destruction of animal life.

The excavations, of which there are several at the base of the *Uparkot*, are made in the face of the same soft stone, and consist in some of three or four low apartments; in others there are as many as six, with a large or principal one in the centre. These apartments are small, flat-roofed, and supported by square pillars without ornament; the entrances to many are through small and low door-ways, but the greater number are quite open. These places are said by some to have been the haunts of a tribe of robbers called *Kaphrias*, and it is a curious coincidence, that on inquiry respecting some similar excavations in a sandstone hill, which I observed near *Lukput* at the western extremity of *Cutch*, I was told exactly the same story. In the neighbourhood of Buddhist records, any thing approaching to a *vihāra*, becomes of great interest; but I fear the very soft nature of the stone from which these are excavated, will not allow of their being considered of any great antiquity. I may however be mistaken in this, and perhaps my sketches of one or two of these caves* may assist in determining, how far they are worthy of being considered ancient. In one was the following inscription, "SHAIKH ALI, the servant of the servant of God; took up his abode in this place, in the year H. 940."

I procured some few coins at *Junagarh*; one belonging to the *Sarashtra* dynasties; the others, the small, and generally illegible, copper coins, which I procured at *Junagarh*, is a description of the *Girnār* and *Uparkot*; this latter is the ancient *Junagarh*, the modern city was styled *Mustafabad*; but the whole is now only known by the ancient title.—"The *Girnār* on three sides is encompassed by hills, those on the northern side are the nearest, those to the south the most distant. The extent of these hills from N. to S. is 12 kos, the whole covered with thick jungle, in which are many caverns inhabited by birds and beasts, and a race of infidels called *Khants*: these castes when pursued by troops flee to the fastnesses of the jungle. There are numerous extraordinary trees growing here whose names are unknown, but besides these are many fruit trees, as the jamba, tamarind, mango, kirnee, and awleh. From the foot of the hill of *Girnār* towards the west, at the distance of three or four bow shots, is a rocky eminence, on which is built the fort of *Junagarh*, whose walls are very strong; there are two wells and two bories: the former are known by the names of *Sri* and *Chiri*. The king of this place was rāja MUNDALIK, mentioned in Indian histories, whose family ruled here for 19 centuries.

* The sketches sent by Lt. POSTANS appear to establish his theory, that the caves were heretofore *vihāras* of a Buddhist monastical establishment: but they exhibit nothing curious or unusual, being similar in every respect to those found at *Dhauli* in *Katak*, and the number of other plates of this article compels us to omit them.

per pice, known in *Cutch*, where they are very common, as the *Gudha ka pyasa*; the fable connected with them is evidently as common in *Kat-twar*, as in the former place, and with many other points of traditional similitude, may I think be admitted in proof of the connection between the Rajput tribes of both provinces.

All my researches tending to the conviction, that, beyond what I have detailed, *Junagarh* could boast of no antiquities within its walls, any further description of it as a modern Muhammadán city, would be superfluous. I shall therefore proceed to the summit of *Gírnar*, the distance of which from the city gates, is calculated by the natives at seven kos (about 10 miles)*. The road from the noted rock to the *Damudar Kúnd*, and temples before mentioned, is over the causeway, on the edge of the nullah, or mountain torrent, which is crossed by a very neat and substantial bridge. This nullah runs directly west from the foot of the *Gírnar*, to the eastern gate of *Junagarh*, where it branches off, following the walls of the city in a northerly direction. To within a short distance of the city, its bed is a succession of immense masses of granite, over which I was told, a torrent, fed by smaller streams from the hills, rushes with great impetuosity during the rainy season. There is no other nullah or river at the foot of the *Gírnar*, in this direction.

A few days previous to my quitting *Junagarh*, I received, amongst other interesting papers from Mr. PRINSEP, one which referred to the inscription on the eastern side of the rock, in which mention is made "of the *Paleshini* river, with a bridge at the foot of the hill of *Girina-gar*, thrice destroyed by inundations, and repaired with wood and stone, 400 cubits long and 75 wide, &c." To have discovered the slightest remains of this bridge, would have been highly gratifying, and I spared no exertion to that end. That the water-course, or large nullah which I have described, is the *Paleshini* "river" alluded to, I feel convinced, from the fact of its being the only channel for the mountain torrents in this direction. Whilst its "inundations" which thrice destroyed the former bridge, agree with the present violence of these torrents. The title of "river" thus given to a large nullah, not more than 50 yards in width at its greatest extent, must be considered as an allowable exaggeration, probably to enhance the magnitude of the work of throwing a bridge across it. Again, the present must always have been the high road, as it is the only accessible one to *Gírnar* on the

* Two kos from the city gate to the foot of the mountain, and thence five kos to the summit; this latter it will be seen from the measurement given, is an absurd exaggeration.

western side. Of this the position of the rock with its inscriptions, intended as they must have been, to attract attention in the vicinity of a great thoroughfare, is sufficient proof ; and hence the former necessity, as now, of a bridge, to enable travellers to *Gírnar* to cross the ravine, or "*Palashini* river." In the absence of even the slightest remains, (so far as I could trace,) of the ancient bridge, the only difficulty in determining its site, is to be found in the measurement given (400 cubits long) ; but I think that even this difficulty may be explained away, without departing far from local evidence. A bridge to have been of any use on the road to *Gírnar*, could only have been erected on, or near the site of the present one, as it is the narrowest part of the valley, and must have stretched the whole breadth of the ravine ; which must be crossed at this precise spot. The greatest distance between the two hills is here only 120 feet, whilst the length of the bridge, according to the measurement in the inscription, calculating the cubit at 19 inches, would be 633 feet—a difference too great to allow of the standard of the cubit in those days being altered to adapt itself to it. But the word "bridge" has, I doubt not, in the inscription, been applied not only to the masonry, &c., spanning the ravine, but also to some portion of the causeway or approach to the same. This I think more than probable, for although the present causeway, actually crosses the nullah in a bridge at one spot only, yet for its whole length, it is necessarily so immediately on the edge of the ravine, and indeed in some places may be said so much to overhang it that the word "bridge" would probably be applied by the natives, to a greater portion, than that actually connecting the opposite banks of the ravine, at the single point where such connection could be of any use to travellers to *Gírnar*. Unless the "*Palashini Nuddes*" is to be looked for in another direction altogether, there is no other way than the above, of accounting for the dimensions of the bridge ; but as there happens to be only this approach to *Gírnar* from the westward, and as its position is immediately at the foot of the hill—coupled with the position of the rock and inscriptions,—there can be no doubt that it is the place referred to. The only remaining pathway to *Gírnar* through the jungle from the southward, has no river, torrent, or corresponding feature about it*.

* This is an accessible but unfrequented pathway, considered dangerous by the natives, from the fear of wild beasts, (lions abound in these hills,) and the *Khantis*; this tribe of freebooters still infest the jungles around *Junagarh*, as described by the author of the *Mirat i Iskandari*. Even the high and well frequented road from the westward, is not considered safe from these depredators, and all the visitors to *Gírnar* who can afford it, hire Arab and Mekrani guards to escort them to the temples. Captain LANG and myself were fired on by a party of these outlaws in passing through the jungle on the eastern side, and at the foot of the *Gírnar*.



Nos 345 Bridge and part of Causeway
* Portion of Stone with Inscriptions (not



I could trace nothing approaching "*Paleshins*" in the names by which the ravine is at present known; these are the *Sirsihee*, *Tribensee*, and *Sonarekha*,—this latter, having some allusion to gold being found in its bed, is curious.

Although I failed to discover the slightest trace of the ancient bridge, the remains of an old causeway are to be seen near the present one, crossing the bed of the ravine in a diagonal direction. It is only traceable for a few yards, but appears to have been connected with some former extensive work of the kind, as it is again to be seen for a short extent beyond the modern causeway towards *Junagarh*. From the *Damodar Kúnd* and temples the *Gírnár* road winds through thick jungle, the ascent commencing at the foot of the western spur or shoulder*. Here it is necessary to quit the horse, and take to a rude, but very convenient conveyance for the purpose; consisting of a small square seat, suspended from two short poles and carried by four men. After a winding and rugged ascent of about a mile, the shoulder terminates at the foot of the scarp, where is a small *dharamsála* and halting-place. Up to this point, the *Gírnár* is connected with the lower range, and its sides, together with the gorges and the valleys of the hills beneath, are richly clothed with a most luxuriant jungle, diversified only with the black rocks, which occasionally appear through the trees and vegetation. But for the rest of the ascent, the sacred mount rises an immense, bare, and isolated granite rock, presenting all the gigantic masses peculiar to that formation. The whole face of the rock is quite black, with occasional white streaks, probably of felspar. The sides to the north and south are nearly perpendicular scarps; on the extreme point of the northern side is an immense pillar or boulder, which seems as it were poised on its pinnacle, requiring only a slight force to dislodge it. This pillar is sometimes the scene of self-sacrifice, and is hence called the *Beiru Jhap* or leap of death†. The noted Jain temples occupy a small ledge or table land surmounting the scarp, and the wall of a kind of fort, which is erected round them, is immediately on the edge of the rock. As seen from below, their apparently very diminutive size has a curious effect. From the *dha-*

* The whole distance from the commencement of the ascent to the summit of the *Gírnár*, I found to be 4691 yards, or two miles, five furlongs, and 71 yards. Its perpendicular height above the level of the sea, is said to be 2600 feet; but this, I had not the means of determining.

† The belief appears to be, that the victim will secure to himself the rank of *rāja* in the next stage of his existence. The immense number of eagles which sail round this pillar and the scarp, add much to its apparent height. A poor wretch had sacrificed himself only a few days before our arrival.

ramadla just mentioned, to the temples, the ascent winds up the face of the rock, every trifling ledge or irregularity in the surface of which has been most ingeniously turned to account, in the formation of a pathway generally about five feet wide, with steps of masonry: these latter are said to have been the gift of a rich mahajun from *Beowdes* in *Rajputána*. This part of the journey is calculated to try the nerves of the traveller, bordering, as the pathway does, upon a perpendicular descent of many hundred feet: a false step might be fatal; and it is quite extraordinary to observe the ease and alacrity, with which the bearers turn the sharp corners and difficult passages in this narrow and dangerous ascent. In descending, they carry the dooley at a rapid pace; but constant practice has made the road so familiar to these poor people, that their dexterity banishes all idea of danger. To attempt any description in detail of the lavish richness in the style and architecture of the *Gírnár* temples, would be beyond my limits. Commanding, as the sect does by whom they are erected and kept up, much of the wealth of India, they have evidently spared none, to make these monuments of their superstition of surpassing magnificence. The walls of the fort, to which I have alluded, occupy the whole ledge surmounting the scarp, and within it are eight temples, a *dharamsala*, and two tanks*. Of the former, the largest and most gorgeous, though by no means the most ancient, is sacred to NEEMNÁTH, whilst the others are erected in honor of the favourite saint PARISNÁTHJÍ†. The figures of the saints, which are very numerous, are generally small, but there is one colossal image of RIKHABDEO‡. There are many inscriptions on various parts of the temples, recording the repairs and additions made to them from time to time by the mahajuns. The original material in all is granite, but the expense of working it being too great, the repairs‡ are now carried on with the stone brought from below, and quarried in the eastern part of the city of *Junagark*. There are three ancient temples, whose peculiar form, with something approaching to a *Dahgop* occupying the whole space in their centre, would lead to the conclusion that they are of Buddhist origin. The dates

* The largest of these was the gift of king KUMAR PAL, 8th of the *Chetak Wuskhi* tribe who ruled at *Ahliwarrah Pattan*.

† Height from the gadec, on which this figure is sitting, to the top of the head 18 feet; length of foot 3 feet. Material, granite coated with chunnam.

‡ Many of these temples have been much mutilated, and one which is now rebuilding, was completely thrown down by ALLAH UD DEEN, styled *Khasm* (or the bloody), who is said to have ravaged *Guserat* like MAHMUD of old. The time of this Muhammadan conqueror is obscure, but at *Gírnár* they say about 300 years ago. I think the temples at *Abú* suffered from the same person.

of these, with copies of inscriptions upon them, as well as the traditions respecting *Gīrnār*, and the other noted Jain sanctuaries at *Sīṭranjīh* or *Pallitana*, have been promised me by a *jattas*, whom I had the good fortune to meet at *Junagarh**, and will, when procured, form the subject of a separate paper. The temples at *Gīrnār* are under the care of *Charans*, who spare no trouble to shew strangers all the curiosities of the place. The month *Phahgun* (February and March) is the period of the great annual *jattra*h at *Gīrnār*, when crowds of mahajuns from all parts of western and central India assemble to visit these shrines†.

From the temples, to the summit of the mount, the ascent is gradual and easy, the steps being continued the whole way. A thin layer of soil upon the surface of the rock, affords sufficient nourishment to the *korunder* bush and wild fig; the former grows with great luxuriance‡. Several small and detached temples occupy sites to the right and left of the pathway; but the only spot of any note, before reaching the summit, is the *Ghai Mūkh*, a spring of beautifully clear water, which issues, as the name implies, from the mouth of the sacred animal: some small shrines are built near it, and it is believed to possess the property of

* There is a small establishment of these men at *Junagarh* belonging to the *Gīrnār* temples, and from the chapras much curious and interesting matter is often to be gained; they are the only annalists in this part of India, and it is evident from the perfect coincidence in names and dates, that those Muhammadan historians who have written on *Guserat*, were indebted to the Jain priests and their books (generally in the *Basha*), for all the information they possess respecting *Ahikwarra Patta*n and similar places. Their annals extend as far back as *Patalliputta*, and *Chandagutta*, *Dindusara*, and *Asoko* are familiar names; but here, their chronology fails them, and beyond the mere names and order of succession they can give no information. In connection with *ASOKA*'s name, I was happy to have it in my power to make my friend the *jattas* (*HASTI WIJJAH*) some return for the assistance he afforded me whilst at *Gīrnār*, by enlightening him on the subject of the character on the noted rock, which he confessed had long excited his curiosity. I also gave him one of Mr. PRINSEP's Sanskrit alphabets; with the assistance of this, and his knowledge of the language, he will be enabled to decipher the edicts of a king, whose name figures in his chapras.

† Although this is the periodical *jattra*h, *Gīrnār* is always well attended, particularly by jogies, who take it on their return from *Dwarka*. The liberal *Sudawarts* which are established here, act as no little incentive to these people, and every natural cave or shelter afforded by the rocks in various parts of the summit, is occupied by one or more of the *Sunyasi* tribe. They come well provided with *Sanks* from *Sankūdar* (Island of *Bate* near *Dwarka*) and at sun-set the whole hill is made to resound to their shrill sounds.

‡ The soil and climate of the *Gīrnār* and neighbouring hills, appear particularly congenial to the growth of the mango. On the eastern side of the former, two extensive ledges in the side of the mount, are entirely occupied by thickets of this tree, and are known as the *Sasha Wun*, 1000, and *Lacka Wun*, 100,000—referring to the number of trees in each. The former is said to have been the scene of a *tupasya* by *NĒMNA'TH*, who was also attended by 1000 devotees.

purifying from sin. The highest point of the *Girnár** is occupied by an ancient temple to *Mata*, or, as it is styled, *Ambaves Mata*; originally Jain, but at present used by the Hindus, and the only one they possess upon the *Girnár*. From this temple towards the south, the road and steps lead to a slight descent, from which a view is obtained of two extraordinary-shaped forks, or peaks of bare granite, which rise from considerable and detached bases to an immense height, gradually receding to points at their summits; they are separated from the *Girnár* by a deep ravine, and the farthest and loftiest is surmounted by a small building, and known as the *Gúrú Dutatri*. As seen from this side, these pinnacles appear perfectly inaccessible; but the *Gúrú Dutatri* is gained by a continuation of the steps, and pilgrims from all parts of India traverse this dangerous and often fatal pathway, daily†.

Without enumerating the many small shrines and sacred spots on the summit of the *Girnár*, it will be sufficient to observe, that the whole of this extraordinary mount, is invested with peculiar sanctity, the origin of which would seem to be of high antiquity. That the present system of worship is a graft of the ancient Buddhist faith which obtained here, there can be no doubt. The Edicts of PYADASI testify abundantly that the hill of "*Girinagar*" and its neighbourhood, was originally a stronghold of the monotheists, whose form of worship has now degenerated into the modern system of Jainism.

The neighbourhood of *Junagarh* has also its share of Muhammadan sanctity. A shrine called the *Dutar*, sacred to the memory of a noted saint, (JUMAL SHA'H,) crowns the summit of a hill to the southward, and is as highly venerated as any in *Guzerat*. This spot is also said to have been the scene of some extraordinary austerities performed by this *peer*, who lived about 100 years ago. The stories connected with JUMAL SHA'H are vague and contradictory; by some he is said to have been buried at *Junagarh*; by others *Tattah* in *Sindh*, is said to claim the honor of his remains. But the veneration paid to his memory is extraordinary. At the foot of the hill various lepers and other persons afflicted with loathsome diseases, have taken up their residence, and occupy themselves in calling upon the saint's name to release them from their afflictions, and restore them to their families; and I have seen the *Cutch* boatmen make their offerings to this shrine, as they pass in view of the *Junagarh* hills along the western coast of *Kat-tywar*.

* The greatest breadth of the table land at the summit of the *Girnár* is only 15 yards.

† One man lost his life, by falling from the steps leading to this pinnacle, whilst we were on the *Girnár*.

Note on Somnāth.

History has given to the idol and temple of *Somnāth* a celebrity that none other of the places of Hindu worship can boast. The romantic account of its destruction given by FERISHTA, is the circumstance by which to this day MAHMUD GHAZNAVI's career of victory and bloodshed is most remembered—so much so that even MILL has condescended to borrow from that historian, the picturesque story of the image yielding to successive blows of the warrior king's battle-axe, till his zeal was repaid by the bursting of the idol's belly, and the discovery of the largest and most valuable jewels concealed within its cavity. The *Rosul oos-sufa*, a history of higher antiquity* and better authority than FERISHTA, gives an account of MAHMUD's expedition, which corresponds in the main particulars with that of FERISHTA, but omits this breaking of the image; nevertheless, as FERISHTA says the pieces were to be seen in his day at *Ghasnavi*, there can be no doubt the image was broken, and carried away as a trophy of the conquest.

The account of the idol and temple given by FERISHTA is evidently borrowed from the *Rosul oos-sufa*, of which the citation of SHEIKH FUREED OOD DEEN's couplet in explanation of the name *Somnāth*, is undeniable evidence. As this work may not be in every body's hands, it may be useful to insert an extract rendered into English, for comparison with the account of the same events which will be found in the first volume of Colonel BRIGGS's FERISHTA. The place besieged by MAHMUD GHAZNAVI must have been the city of *Patan*, the situation of which on the sea side, as described by Lient. POSTANS, exactly corresponds with the description in both histories, though the name of the town was lost in the greater celebrity of the idol and its temple.

"*Somnāth* is the name for an idol which, according to the Hindus, was lord of all idols. But SHEIKH FUREED OOD DEEN UTAR, the poet, says, *Somnāth* is the name of a place, and *Lat* the name of the idol, for he has the following couplet :

یافتند آن بُت که نامش بود لات — لشکر محمود اندر سومنات

"Historians however agree that *Somnāth* was an idol in a temple situated on the sea side, which idol the Hindus worshipped, especially at times of eclipse. More than a lakh of people used to come to it on nights when the moon was under eclipse: and they believed too, that the souls of the deceased came to *Somnāth*, on first leaving the bodies they had occupied, and were there assigned to fresh bodies. They also believed that the sea worshipped *Somnāth*, and the rise and fall

* The *Rosul oos-sufa* was compiled by order of AMEER ULER SHEER, between the Hijra years 900 and 902, A D. 1444 and 1496.

of the tides was considered to be proof of this. From the most distant parts of India pilgrims used to come to worship at this shrine: 10,000 villages were assigned for its support, and there were so many jewels belonging to it, as no king had ever one-tenth part of in his treasury. Two thousand Brahmins served the idol, and a golden chain of 200 muns supported a bell-plate, which being struck at stated times called the people to worship; 300 shavers, 500 dancing-girls, and 300 musicians were on the idol's establishment, and received support from the endowment and from the gifts of pilgrims. The Ganges is a river to the east of *Dehlee* near *Kanauj*, which the Hindus believe to flow from heaven, and into which they throw the ashes of the burned dead, conceiving that by so doing the sins of their lives are washed away. Brahmins, drowning themselves in this stream, believe that they secure eternal beatitude. Distant as the river is from *Somnāth*, still there were pilgrims employed in continually bringing its water thither, so that the idol might be regularly washed with it.

"In Hejira 416 MAHMUD GHAZNAVI invaded India and destroyed all the idols; whereupon the Hindus said, that the idol *Somnāth* had in its anger caused their destruction, otherwise the destroyer would have perished. MAHMUD hearing of this, resolved to proceed against *Somnāth* itself, thinking that, when that most sacred image should be destroyed, the Hindus would more readily turn to Islam.

"On the 10th Shaban 416, (12th Oct. 1025,) the king moved with 30,000 mounted warriors, lightly equipped, to *Multan*, where he arrived in the middle of Ramzan, (Nov. 1025.) There, finding that between him and *Somnāth* lay a wide desert, without water or forage, he assigned to each trooper two camels, and besides loaded 20,000 camels with supplies and water. Having thus passed the desert, he came upon a country full of strong forts, (*Ajmeer*,) the holders of which mostly submitted; whereupon the king ordered the men to be put to death, and the women and children to be made captives, and he destroyed all the idols. Thence advancing, he came to *Bhuwara* (in FERISHTA *Nihurwala*), which was deserted by its chief and garrison, and MAHMUD establishing a depôt there, continued his march, destroying all the idols and temples as before, till he came to the neighbourhood of *Somnāth*, in the month of *Zeekeed*, (January, 1026.) There he found a strong fort on the sea side, so situated that the waves washed to the top of the battlements. The Hindus crowded the ramparts, expecting to see the Moosulman army destroyed by the idol god for its presumption. The next day the army approached the walls, and commenced the assault with such vigour, as the Hindus had never before seen. The

walls were soon cleared by the archers, and ladders being planted, the warriors mounted with the cry of 'ALLAH AKBAR.' The Hindus thereupon turned on the assailants and fought desperately, some fighting, while others went to the idol, and, prostrating themselves, prayed for victory. After fighting all day, the besiegers retired to their camp; but next morning they renewed the assault, and cutting off the heads of all who opposed them, penetrated to the temple of *Somnath*. There the Hindus alternately prostrating themselves and renewing the battle, maintained themselves till night. Many of them were slain, and many attempted by embarking in vessels to effect their escape by sea; but MAHMUD, embarking part of his army, pursued them, and made great slaughter amongst the fugitives, thus completing his victory. The temple of *Somnath* was supported by fifty-six pillars ornamented with rubies, emeralds, and other precious stones; each of these pillars bore the name of a different king of India as its embellisher. Fifty thousand infidels, and more, were slain round this temple, which was vast in dimensions, &c. &c." The history then proceeds with the arrangements after the conquest.

Lieutenant POSTANS, in his very interesting account of the present condition of this temple, seems to be of opinion, that he saw it as it was left by MAHMUD GHAZNAVI after his conquest in 416 Hejira or 1025-26 A. D. This, however, is not the case. Although the great image was broken and carried away, and perhaps all the carved images about the temple were industriously decollated or otherwise mutilated, still as MAHMUD left a Hindu prince of sacred character, called in the Persian histories DABISHLEEN, probably DEVEE SINGH, as his vicegerent at *Somnath*, it is most probable that the temple was promptly, if not effectually, restored, for the sake of the revenue to be derived from its pilgrim tax. The poet SADI, who lived 200 years after MAHMUD, gives in his *Bostan* an amusing tale of his own adventures at *Somnath*; it commences,

بَی دیدم از عاج در سومات — مرمع چو در جاهلیت منات

"I saw an idol of ivory at *Somnath*, jewelled like the idol *Mundt* in the days of superstition and ignorance," &c. The story is illustrative of the state of the temple, and of manners, and may therefore be told with advantage. SADI, wondering at the folly of live people paying their adoration to a material without sense or motion, ventures to express his sentiments to an attendant priest, with whom he has some acquaintance. The priest turns upon him in rage, and excites a commotion, which endangers SADI's life; whereupon he throws himself upon the

mercy of the chief priest, stating that, although he had ventured to express a doubt, it was merely because he desired conviction. The priest tells him he is a man of sense and judgment, and shall be convinced that this idol is superior to all others, and deserving of adoration. If he will abide in worship all night, he promises him to see the idol raise its arm in the morning in adoration. SADI consents, and gives an amusing account of the inconvenience he experienced from the pressure of the unwashed, unsavory crowd. Just before sunrise, the image, at the sounding of a bell, raises its arm, to the delight of the worshipping thousands. SADI assures the chief priest of his perfect conviction, flatters him and obtains his intimacy, till, finding an opportunity when the temple is empty, he gets behind the image, and there discovers a servitor concealed, with the rope in his hand for raising the idol's arm. The man runs, and SADI follows, trips him up and throws him into a well: then, to make quite sure, he drops heavy stones upon him, feeling that his own life would assuredly be sacrificed, if his discovery were known, and quaintly remarking *که از مرده دیگر نیاید حدیث* "Dead men tell no more tales." He then hurries away from Somnāth, and returns to Persia through Hindustan, by a route of great danger and difficulty, the troubles of which he says he shall remember to his dying day.

Such is the story, and it shows the temple to have been restored, as a place of Hindu worship, after its destruction by MAHMUD, and to have remained as such, with something like its former renown, for 200 years after that conquest. It is evident, however, from its present appearance, that it has since yielded to other spoilers, and has even been converted at one time into a masjid. The minarets on each side of the principal entrance, are evidently Muhammadan, and the interior arches observable in the sketch No. LI. are also no part of the original Hindu fabric; but must have been erected at a much later date, to support the magnificent roof described by Lieut. POSTANS, in lieu of the fifty-six pillars adorned by fifty-six rājas, which were stripped, if not broken, by the destroyer of the 11th century.

The pundits say, that there is nothing in the *vedas*, *puranas* and other brahmanical text-books to illustrate the origin and history of the Somnāth temple. Its situation on the shore of the Indian ocean, and the corresponding temple of the sun in Katak, known as the Black Pagoda, and situated on a like promontory washed by the waves of the eastern sea in the Bay of Bengal, will not fail to strike the reader. And ASOKA's selection of rocks on the high road to each, for the promulgation of his edicts, would seem to indicate, that both enjoyed in his day a cor-

responding celebrity ; and that, through the resort of pilgrims, the approaches to them afforded the surest means of causing his doctrines and injunctions to be universally known.

In this number, we confine our observations to the *Somnāth* temple. The more valuable relics of *Gīrnār* must be reserved for more careful examination. Lieut. POSTANS' report and sketches of the rocks, and of the valley of *Junagarh*, will shew precisely the site and outward appearance of the natural tablets, upon which the edicts of ASOKA have been so carefully and so durably engraved. With that we must at present be satisfied. The examination of the facsimiles, and their comparison with the previous readings and printed version of this extraordinary inscription, will be the work of time : and unfortunately the drawings and facsimiles of Lieut. POSTANS reached Calcutta the very day after the discoverer of the key for decyphering this ancient character had taken his departure, in a state of health that prevented his giving close attention to any of his favorite pursuits. He had prepared every thing before his sickness, for the final comparison which was to be made on their expected arrival. He had already corrected the version, printed in preceding Numbers of this Journal so as to have completed, almost to his perfect satisfaction, the entire restoration and decyphering of this valuable relic of 20 centuries. It remained only to refer to the facsimiles for a few doubtful letters and passages ; this labour, which to him would have been the work, only of a few hours, will impose upon any other who undertakes it, the task of mastering the character and language of the inscription, and of remaking the collations *ab initio*. The facsimiles are in the museum of the Asiatic Society, and the learned and the curious are invited to their examination.

Since the above note was written Mr. KITTOE, who has kindly lithographed the sketches of *Somnāth* for the Journal, has favored us with the following note on its architecture.

NOTE by Mr. KITTOE on the *Architecture of the temple of Somnāth, as exhibited in plates XL. and XLI.*

Much pains do not appear to have been bestowed by the " Faithful" (who converted the temple of *Somnāth* into a musjid), to obliterate what still remained of its idolatrous features. The minarets and domes of the exterior, and the vousoir arches of the interior supporting them, seem to be the only parts of Moorish origin ; the pillars now occupying the interior of the fabric, and supporting the flat portions of the roof, most probably originally adorned the porches, or " Subhas" and colonnades, which, even in the present day, characterise some of the temples of Orissa and lower down the coast.

That part of the fabric, represented in plate L. as covered by domes and flat roofing, is most probably the multangular base of a once gigantic conical tower, like those of *Kanaruc*, *Jugunnath*, *Bhobensour*, and of many others in different parts of the continent of India. That shape was common to all *Brahminical* edifices, and is still adhered to in the present day.

The most curious feature is the perfectly Egyptian doorway, built within the original sculptured lintels apparent in the plate; this was probably constructed when the temple was restored, after its destruction by MAHMUD GHAZNAVI.

Plate LI. seems to represent the interior of an octagonal apartment beneath the principal dome, which appears to have been originally supported on eight pillars and architraves taken from different parts of the temple; these being subsequently found too weak to support its weight, arches appear to have been turned and built in beneath: the remainder of the roof, which seems to be supported by pillars of various shapes with brackets and plain architraves, the style of which is precisely the same as of those in the old mosques at *Jounpūr*, likewise constructed with the fragments of demolished temples. Many of the pillars there are elaborately sculptured; others again are perfectly plain, as represented in the plate before us for *Somnāth*; but the original pillars of MAHMUD GHAZNAVI's time may have been cased with gilt copper and jewels, for Colonel MACKENZIE in his papers, describes several columns thus adorned in the Carnatic.

The admixture of Moorish and Hindu sculpture and architecture, resulting from this practice of converting temples into mosques in the manner above described, gave rise to a style, which might well be termed "Indo-musjidy," for the proportions are as three of the former to one of the latter.

VI.—Population and Mortality in Calcutta.

We are indebted to the same anonymous contributor, who furnished Capt. HERBERT with the statement of protestant deaths, published in the *Gleanings*, vol. III. p. 88, for the enlarged table which we now present, and which, although it must necessarily be uncertain as a foundation for estimating the mortality of different classes, still, until we have a regular municipal record of the inhabitants of all conditions, classed by age, these results may be looked upon as a tolerable approximation to the truth. We will leave the compiler to make his own remarks on the Mortality table. The second table, or that of the population, appears to have been taken through the *thanahs*; and if the *Khāneh shumārī* system be repeated every five years or so, we should think that the results compared would afford a good average.

Mortality among all classes in Calcutta for 20 years, but for the Native Population only 5 years.

| Years. | Protestant burials. | Catholic burials, D. K. or R. K. | Catholic burials, R. K. or R. K. | Greeks. | Armenians. | Indo-Armenians. | Native Christians. | Natives. |
|----------|---------------------|----------------------------------|----------------------------------|---------|------------|-----------------|--------------------|---|
| 1817 | 216 | 313 | 169 | 4 | 10 | 3 | .. | |
| 1818 | 272 | 211 | 159 | 2 | 20 | 3 | .. | |
| 1819 | 276 | 284 | 158 | .. | 23 | 3 | .. | |
| 1820 | 281 | 282 | 136 | .. | 17 | 1 | .. | |
| 1821 | 246 | 277 | 172 | .. | 16 | 3 | .. | |
| 1822 | 324 | 394 | 140 | .. | 16 | 2 | .. | |
| 1823 | 270 | 277 | 156 | .. | 10 | 3 | .. | |
| 1824 | 278 | 282 | 188 | .. | 21 | 1 | .. | |
| 1825 | 297 | 285 | 154 | 1 | 12 | 10 | .. | |
| 1826 | 275 | 309 | 145 | 2 | 19 | 17 | .. | |
| 1827 | 254 | 308 | 174 | .. | 15 | 16 | 4 | |
| 1828 | 266 | 250 | 170 | 3 | 15 | 12 | 3 | |
| 1829 | 184 | 209 | 146 | 3 | 12 | 16 | 2 | |
| 1830 | 224 | 236 | 138 | 1 | 14 | 15 | .. | |
| 1831 | 186 | 236 | 123 | 3 | 17 | 19 | 8 | |
| 1832 | 217 | 269 | 121 | 1 | 17 | 16 | 1 | |
| 1833 | 302 | 288 | 304 | 2 | 23 | 14 | 5 | Hindoo, 8399
Muslimans, 1009
Hindoo, 15138
Muslimans, 2386
Hindoo, 11167
Muslimans, 1900
Hindoo, 6873
Muslimans, 1229
Hindoo, 6866
Muslimans, 1815 |
| 1834 | 281 | 257 | 199 | 2 | 16 | 17 | 4 | 9308 in 1833.
17523 in 1832.
13067 in 1834.
8103 in 1833.
7881 in 1836. |
| 1835 | 233 | 233 | 115 | 1 | 7 | 16 | 4 | |
| 1836 | 197 | 188 | 104 | 0 | 15 | 13 | 3 | |
| | 5065 | 5288 | 3070 | 24 | 315 | 199 | 34 | 5581 |
| | 24 | 20 | 50 | 12 | 50 | 30 | 9 | 5 |
| Average, | 253 | 264 | 183 | 2 | 154 | 10 | 34 | 11178 |

Statement of the average rate of Mortality per cent. among the different classes of inhabitants in Calcutta per census and Table of mortality.

| Denominations. | No. of Inhabitants. | Total. | Average mortality p. annum. | Average mortality per cent. | |
|---------------------------|---------------------|--------|-----------------------------|-----------------------------|---------|
| English, | 3138 | 7884 | 277 | 3½ pr. ct. | 1 in 28 |
| Eurasians, | 4746 | | | | |
| Portuguese, | 3181 | 3341 | 417 | 12½ | 1 in 8 |
| French, | 160 | | | | |
| Western Muhammadans, | 13,677 | 59,622 | 1607 | 2½ | 1 in 36 |
| Bengal Muhammadans, | 45,067 | | | | |
| Moguls, | 527 | | | | |
| Arabs, | 361 | | | | |
| Western Hindus, | 17,333 | | | | |
| Bengal Hindus, | 120,318 | 157418 | 9558 | 6½ | 1 in 16 |
| Mugs, | 683 | | | | |
| Low Castes, | 19,084 | | | | |
| Armenians, | | | | | |
| Native Christians, | | | | | |
| Chinese, | | 636 | 25½ | 4½ | 1 in 25 |
| Jews, | | 49 | 3½ | 6½ | 1 in 14 |
| Parsees, | | 362 | | | |
| Madrassees, | | 307 | | | |
| | | 40 | | | |
| | | 55 | | | |

The great difference in mortality between the Hindus* and Muhammadans is striking, while the difference to be observed between the Portuguese, as compared with the English and the Eurasians, is equally so.

Here is much room for speculation, and it cannot be said that as yet we have as good means of getting correct information upon this subject as they possess in Europe: nevertheless, we may approach as near as we can to the point we wish to ascertain, and we may hope to improve in such statistical records.

The Portuguese, among whom so great a mortality is shewn, are a suffering race very subject to the catalogue of complaints enumerated in these papers; while the English and Eurasians are far more prosperous in life, and enjoy comforts and happiness in a very high degree, as compared with the former section of society. The mortality of the English and Eurasians 3½ per cent. per annum, while that of the Portuguese being 12½ per cent. is very great. In 1830 I ascertained, and published, in the Gleanings of Science the burials in Calcutta of Protestant Christians from the year 1820. To shew at that time, that although the European population must have greatly increased, yet, that the deaths and burials had not encreased, and now that the same population is acknowledged to have increased very materially indeed, yet we see upon referring to the first column of one of the tables, giving the Protestant burials, for the last 20 years, no increase of deaths. The years 1833-4, the two years following the sea inundations, shew the greatest mortality of late years; while among the native population those two years, shew an extraordinary mortality. The two last years shew in respect of both European and Native population that healthiness

* The difference of Mortality amongst the Muhammadans and Hindus may be accounted for by the circumstance that the Hindus of Calcutta consisting of families include a much larger proportion of Infant life. The same circumstance will explain the great difference between the average Mortality amongst the Portuguese and the Europeans of Calcutta.—Ed.

is restored. The mortality among the other columns of society, the Catholic, Greek, Armenian, Hindu Armenian, and Native Christian, are for the last 20 years, and I believe them to be nearly correct. The Chinese and the Jews keep no account of their burials; I of course could not include them, and they form a minute portion of the population of this city.

[illegible]

* These columns are not included in that of the total.

VII.—*Report on the Weights, Measures, and Coins of Cabul and Bukhara. By NOWROZJEE FURDOONJEE. Forwarded by Captain BURNES to Government, and transferred to the Asiatic Society.*

Now that, happily for the interests of British and Indian commerce, a more intimate and extensive intercourse is about to commence with countries adjoining to India, the following humble attempt to simplify and accurately describe the weights, measures, and coins of *Cabul* and *Bukhara* will not, it is hoped, be thought without use; the more so, since the subject has been hitherto left untouched by European merchants and travellers, though a knowledge of it is indispensable to the scientific and commercial world.

OF CABUL WEIGHTS.

General commercial or gross weight.

| | | | | |
|-----|-------------------------|-----|---------------------------|--|
| 6 | Nukhods | = 1 | Shahee. | |
| 4 | Shahee | = 1 | Miscal. | |
| 20 | Miscals | = 1 | Khoord, or Seer i Tabrez. | |
| 4 | Khoord | = 1 | Pow or Powee. | |
| 4 | Powee | = 1 | Charuk. | |
| 4 | Charuk* | = 1 | Seer. | |
| *2½ | Charuck or
40 Khoord | } | = 1 | Mun i Tabreez. |
| 8 | Seer | | | |
| 10 | Munkhanee | = 1 | Khurwar. | |
| 6 | Munkhanee | = 1 | Camel load. | } Net being of a fixed
proportion these are
given on an average. |
| 4 | Ditto ditto | = 1 | Mule or poney load. | |
| 3 | Ditto ditto | = 1 | Ass load. | |

There are two different muns in use at *Cabul*, viz. :—

1st. The *Mun i Tabreez*, which is equal to 2½ charuks of this country, or = 9 lbs. 10 oz. 160 grs. troy.

2nd. *Mun i Khanee* which is equal to eight seers of this country, or = 126 lbs. 2 oz. 320 grs. troy.

The maund of India is unknown, and the mun of *Tabreez* is evidently that introduced from Persia, where it is universal.

The seer is also of three varieties and denominations, viz. 1st. One *seer i cabul*, which is equal in weight to 504,888 Bombay rupees or tolas, being found by actual experiment to contain 90,880 grs., or = 15 lbs. 9 oz. 160 grs. troy. In like manner I found the miscal to weigh exactly 71 grains. The latter being the unit of the ponde-

rary system of Afghanistan and Tartary, I have preferred it for my standard by which all the other weights are ascertained with the utmost precision. There are 1280 miscals in a *Cabul* seer.

2nd. *Seer i Tabreez*, which is only the 16th part of a charuk or 20 miscals = 2 ounces and 460 grains troy.

3rd. *Seer i Hindustan*, or that introduced from India.

4th. Chooraika are foreign measures, and not much used.

I. The commercial weights of *Cabul* as compared with British and Indian weights.

| Cabul weights & their denominations. | Value in British avoirdupois weight. | | | Value in Indian weights. Bombay and Guzerat. | | | | | |
|--------------------------------------|--------------------------------------|-----|---------|--|------|------|-------|--------|-------|
| | lbs. | oz. | grains. | mds. | seer | tola | masha | ruttee | dhan. |
| 1 Nukhead, ... | 0 | 0 | 2.958 | 0 | 0 | 0 | 1 | 2 | 315 |
| 1 Shahee, ... | 0 | 0 | 17.750 | 0 | 0 | 0 | 1 | 1 | 1.891 |
| 1 Miscal, ... | 0 | 0 | 71.000 | 0 | 0 | 0 | 4 | 5 | 3.466 |
| 1 Khoord or seer, Tabreez, ... | 0 | 3 | 107.187 | 0 | 0 | 7 | 10 | 5 | 1.320 |
| 1 Pow or Powee, ... | 0 | 12 | 428.748 | 0 | 1 | 3 | 6 | 5 | 1.280 |
| 1 Charuk, ... | 3 | 3 | 402.062 | 0 | 4 | 14 | 2 | 5 | 1.120 |
| 1 Seer, ... | 12 | 15 | 295.312 | 0 | 18 | 0 | 10 | 5 | 480 |
| 1 Mun Khane, ... | 103 | 13 | 175.000 | 3 | 24 | 7 | 1 | 0 | 3.840 |
| 1 Khurwar, ... | 1038 | 6 | 0.000 | 36 | 2 | 14 | 11 | 1 | 2.400 |

Besides giving the equivalent of the native weights in British Avoirdupois weight I have, in the above and other succeeding tables, endeavoured to draw a comparison with the Indian weights, particularly those of Bombay and *Guzerat*, which might if required, be easily converted into Bengal weights by the following relation.

Bombay and Guzerat.

Bengal.

British.

3 Maunds, = 1 Mun or Standard Maund, } = 34 lbs. av. or $\frac{1}{4}$ cwt.

2857 Seers, = 1 Seer of 80 tolas, = 2057 lbs.

The tola = 180 grains is uniform in all the presidencies.

Goldsmith's or Jeweller's weight.

4 Pa = 1 Nukhead.
 6 Nukheads = 1 Shahee.
 4 Shahee = 1 Miscal.

* This is used chiefly by Hindu grocers in *Cabul* in purchasing Indian Commodities.

II. Jeweller's weight compared with Indian & English Troy weights.

| Cabul weights. | | Indian weights. | | | English Troy weights. |
|----------------|-----|-------------------------|---|-------|-----------------------|
| | | Mashas, ruttees, dhans. | | | grains. |
| 1 Pa, | ... | 0 | 0 | 1.578 | 0.739 |
| 1 Nukhoad, | ... | 0 | 1 | 2.315 | 2.958 |
| 1 Shahee, | ... | 1 | 1 | 1.891 | 17.715 |
| 1 Miscal | ... | 4 | 5 | 3.466 | 71.000 |

MEASURES.

Cloth Measure.

| | |
|------------|-------------------|
| 4 Khoord | = 1 Gheerah. |
| 4 Gheerahs | = 1 Charuk. |
| 4 Charuks | = 1 Guz. |
| 4 Pow | = 1 Charuk i guz. |

III. Cloth measure compared with English and Indian measures.

| Cabul measures. | | Indian guz. | | English inches. |
|-----------------|-----|-------------|----------|-----------------|
| | | Guz. | Tussoos. | |
| 1 Khoord, | ... | 0 | 0.562 | 0.632 |
| 1 Geerah, | ... | 0 | 2.250 | 2.531 |
| 1 Pow, | ... | 0 | 2.250 | 2.531 |
| 1 Charuk i guz, | ... | 0 | 9.000 | 10.125 |
| 1 Guz i Shah, | ... | 1½ or 36 | | 40.500 |

This guz is called *guz i shah* because it was introduced by AHMED SHAH. It is used for measuring all sorts of cloths, goods, &c., and is also employed by tailors in their use. It is equal to $1\frac{1}{2}$ guz of Bombay and *Guzerat*, and measures $40\frac{1}{2}$ inches English.

Carpenter's or Timber Measure.

| | |
|----------------------------|-------------------|
| 4 Moeebur (hair's breadth) | = 1 Rujja. |
| 4 Rujja | = 1 Payen. |
| 4 Payen | = 1 Teereea. |
| 3 Teereea | = 1 Tussoo. |
| 6 Tussoo | = 1 Charuk. |
| 4 Charuk | = 1 Guz i maimar. |

This guz is used by carpenters, bricklayers, and masons, and for timber measuring.

IV. Timber measures of *Cabul* compared.

| Cabul Measures. | Indian Measure. | | English Inches. |
|---------------------|-----------------|----------|-----------------|
| | Bhay Guz | Tussoos. | |
| 1 Moeebur, ... | 0 | 0.019 | 0.021 |
| 1 Rujja, ... | 0 | 0.076 | 0.085 |
| 1 Payeen, ... | 0 | 0.305 | 0.343 |
| 1 Teereea, ... | 0 | 0.407 | 0.458 |
| 1 Tussoo, ... | 0 | 1.223 | 1.375 |
| 1 Charuk, ... | 0 | 7.333 | 8.250 |
| 1 Guz i Maimar, ... | 1 | 5.333 | 33.000 |

There are only two kinds of *guz* in *Cabul*, viz. the *guz i shah*, and *maimaree*, the former, as already stated, measuring $40\frac{1}{2}$ inches, and the latter 33 inches English.

Measures of Capacity.

These are the same as the weights, there being no separate kind of measures for liquids nor for coin.

Land Measure.

This includes both linear and square measure.

| | |
|-----------------------|------------------------------------|
| 3 Kudums | = 1 Biswa. |
| 20 Biswas or 60 paces | = 1 Jureeb = also 20 Guz i Shah. |
| 66 Jureeb* | = 1 Kroh or Kos. |
| 12 Kos | = 1 Royal Munzil or day's journey. |

These measures are uncertain, not being fixed to any permanent standard: they vary in many parts, cannot be precisely ascertained, and must not therefore be depended upon. However, the following comparison may give some idea, and convey a pretty good conjecture as to their extent:

| | |
|---------------|--|
| 1 Biswa | = $3\frac{1}{2}$ or 4 feet. |
| 1 Kudum | = $1\frac{1}{4}$ or $1\frac{1}{2}$ to ditto. |
| 1 Jureeb | = 70 or 80 feet. |
| 1 Kroh or Kos | = 2 miles*. |
| 1 Munzil | = 24 miles. |

Taking 14 or 13 inches for one *kudum*, three of which are said to be

* The assumption of two miles for the *kos* gives 66 *jureeb* of 80 feet, but this is too much for the ordinary *kos*.—ED.

equal to one *guz i shah*, the *jureeb* is about 60 or 70 feet square, or, if measured by the *guz i shah*, it comes to 67 feet, and as a last resource: taking a medium of all these results, we have one *jureeb* = 70 feet square.

COINS.

| | | |
|------------------------|--|---|
| 8 Kourees | = 1 Kusseera. | } Copper. |
| 4 Kusseera | = 1 Pysa, (pookhta.) | |
| 2 Ghuz | = 1 Ditto. | |
| 5 Pysa | = 1 Shahee. | } Formerly silver but
now imaginary. |
| 2 Shahee | = 1 Sunwar. | |
| 2 Sunwar | = 1 Abassee. | |
| 3 Abassee or 12 shahee | = 1 Rupee.—Silver. | |
| 7 Rupees | = 1 Tilla. | |
| 6 Rupees | = 1 Boodkee or ducat. | } Gold coins. |
| 15 to 18 Rupees | = 1 Ushurfee or mohur. | |
| 20 Rupees | = 1 Toomân, (an imaginary money
like the Kory of Bombay.) | |

The rupees and pice are either *kham* or *kucha*, or *pookhta*, i. e. *puk-ka*, and where the former is not specified, the latter is always to be understood. Their rates are as under.

| | |
|------------------|-------------------|
| 6 Pookhta rupees | = 7½ Kham rupees. |
| 6 Pysa khawm | = 1 Shahee, or |
| 72 Ditto | = 1 Rupee. |

The Tooman i khawm is worth 18½ rupees.

In the time of SHAH SHOOJA and ZUMAN SHAH, there were six pice *pookhta* current in a *shahee*, or 72 pice in a rupee, but they have been lessened to 60 in a rupee by the present Ameer. The rupees have also been reduced in weight by the present ruler, for Shah Zumanee rupees now bring 14 *shahees* in the bazar. At present there is no silver coin of lower denomination than a rupee; but in the time of the late monarchs of Afghanistan, the *abassee*, *shahee* and *sunwars* were of silver. They are not coined any more.

V. A general Table of *Cabul*, Indian and English Monies and Exchange, showing the produce of the former country's currency in Company's rupees at the present rate of exchange, i. e. 117 *Cabul* rupees for 100 of the E. I. Company: and in pounds and shillings sterling, at the commercial par of exchange, viz. 1 shilling 11.51 pence per 1 Bombay rupee, or 195 shillings per 100 Bhay Rs.

| Cabul Currency. | Metal. | Rate per Rupee. | Value in Indian currency Company's. | | | Value in British Currency. | | | Weight in grains. |
|------------------|---------|-----------------|-------------------------------------|-----|-------|----------------------------|----|-------|-------------------|
| | | | Rs. | As. | Pies. | £ | s. | d. | |
| 1 Koursee, .. | Shell, | 1920 | 0 | 0 | .063 | 0 | 0 | .010 | |
| 1 Kuseera, .. | Copper, | 240 | 0 | 0 | .671 | 0 | 0 | .063 | 35 |
| 1 Ghaz, .. | Ditto, | 120 | 0 | 0 | 1.342 | 0 | 0 | .166 | 70 |
| 1 Pysa, .. | Ditto, | 60 | 0 | 0 | 2.685 | 0 | 0 | .333 | 142 |
| 1 Shahee, .. | Silver, | 12 | 0 | 1 | 1.425 | 0 | 0 | 1.666 | 15 |
| 1 Sunwar, .. | Ditto, | 6 | 0 | 2 | 2.850 | 0 | 0 | 3.333 | 30 |
| 1 Abbases, .. | Ditto, | 3 | 0 | 4 | 5.700 | 0 | 0 | 6.666 | 60 |
| 1 Rupee, .. | Ditto, | 1 | 0 | 13 | 8.102 | 0 | 1 | 8.000 | 147 |
| 1 Tilla, (7 Rs.) | Gold, | 14285 | 5 | 15 | 8.717 | 0 | 11 | 9.097 | 71 |
| 1 Boodkee, .. | Ditto, | per 0.0 Rs. | | | | | | | |
| (6 Rs.) .. | | 16,666 Rs. | 5 | 2 | .615 | 0 | 9 | 0.048 | 525 |
| 117 Cabul Rs. | | | 100 | 0 | 0 | 9 | 15 | 0 | |
| 100 Ditto, .. | | | 85 | 7 | 6.236 | 8 | 6 | 6.880 | |

The old *Herates* and *Shah Zumanee* rupees (out of currency now) coined at *Herat* and *Cabul* respectively in the years 1214, 1216, and 1217 A. H. weigh each $2\frac{1}{2}$ miscals or 178 grains, being only two grains less in weight than the present Bombay and Madras rupees of one tola. They contain five grains of alloy. The present *Cabul* rupee weighs 147 grs. and contains the same quantity of alloy though it is less in weight than the former.

OF BUKHARA WEIGHTS.

| | | |
|------------------------|-----|--------------------------|
| $4\frac{1}{2}$ Miscals | = 1 | Tola. |
| 20 Tolas | = 1 | Pow. |
| 2 Pow | = 1 | Neemcha. |
| 4 Neemcha | = 1 | Charuk. |
| 4 Charuks | = 1 | Dooneemsur. |
| 2 Doneemseer | = 1 | Poot or Pood, (Russian.) |
| 16 Ditto | = 1 | Mun of Bukhara. |

This is the general commercial weight of *Toorkistan* or *Tartary*. The *pood* is a Russian weight used at *Bukhara* in purchasing Russian commodities. The *tola* obtains currency in *Bulkh*, *Khulum* and *Kunduz*, where it is employed in weighing tea, wax, silk, and grocery. In *Bukhara*, grains, flour and such other bulky articles are weighed by the mun—meat, butter, milk, &c. by the *charuk*; while sugar, fruit, ghee, &c., &c., are weighed by the *neemcha*.

VI. Table of the weights of *Bukhara* compared with those of *Cabul*, England and India.

| Bukhara. | Cabul. | English Avoirdupois weight. | | | Indian. | | | | |
|---------------|-------------------------|-----------------------------|-----|----------------|---------|------|------|-------|---------|
| | | lbs. | oz. | drs. | Mun | seer | tola | mahta | ruttee. |
| 1 Mun, .. | $21\frac{1}{2}$ Seers, | 278 | 12 | 0 | 12 | 24 | 24 | 11 | 1.440 |
| 1 Doneemseer, | $1\frac{1}{2}$ ditto, | 17 | 6 | 12 | 0 | 31 | 15 | 6 | 5.590 |
| 1 Neemcha, .. | 5 Khoord or 100 miscal | 1 | 1 | $6\frac{1}{2}$ | 0 | 1 | 27 | 2 | 5.349 |
| 1 Charuk, .. | 5 Pow, | 4 | 5 | 11 | 0 | 7 | 24 | 10 | 5.397 |
| 1 Pood, .. | $3\frac{1}{2}$ Seers | 34 | 13 | 8 | 1 | 23 | 8 | 1 | 3.180 |
| 1 Tola, .. | $4\frac{1}{2}$ Miscals, | 0 | 0 | 6905 | 0 | 0 | 1 | 8 | 2.424 |
| 1 Pow, .. | $2\frac{1}{2}$ Khoord, | 0 | 8 | 11,375 | 0 | 0 | 27 | 7 | 2.674 |

MEASURES.

Cloth Measure.

| | | | | | |
|---|---------|-----|---------|------|---------|
| 4 | Pow | = 1 | Charuk | = 7 | Ditto. |
| 4 | Charuk | = 1 | Alcheen | = 28 | Inches. |
| 2 | Alcheen | = 1 | Kolach | = 56 | Ditto. |

By the *kolach*, chintz, *kurbas*, and other cloths are measured. The *Alcheen* is a Russian measure.

Land Measure.

At *Bukhara*, in lieu of the *juresb*, another measure called the *tentab*, 70 paces square, is used in measuring lands, and for long distances the *sung* or measure of three coss, or six miles, is employed in use.

COINS.

Money Tables.

| | | | |
|----|-----------------|-----|-------------------|
| 11 | Poole Seeah | = 1 | Meere. |
| 45 | Dq. or 4 Meerce | = 1 | Tunga. |
| 21 | Tungas | = 1 | Tilla. |
| 17 | Tungas | = 1 | Boodkee or Ducat. |
| 3 | Soum (roubles) | = 1 | Tilla. |

VII. Table of the relative value of *Bukhara*, *Cabul*, English and Indian monies at the commercial par of exchange.

| Bukhara. | Metal. | Weight
in grains | Cabul. | English. | Indian currency. |
|----------------|---------|--------------------------------|---------------|------------|------------------|
| | | | Rs. Shahes P. | £ s. d. | Rs. As. Pis. |
| 1 Pooli Seeah, | Brass, | | 0 0 22 | 0 0 0 .144 | 0 0 1.348 |
| 1 Meerce, .. | Silver, | 11 | 0 1 0 | 0 0 1.588 | 0 1 1.739 |
| 1 Tunga, .. | Ditto, | 48 | 0 4 0 | 0 0 6.355 | 0 4 9.918 |
| 1 Boodka* | | | | | |
| ducat, .. | Gold, | 525 | 6 0 0 | 0 9 .048 | 5 2 .613 |
| 1 Tilla*, .. | Ditto, | 71 | 7 0 0 | 0 11 9.097 | 5 15 8.717 |
| 1 Soom*, .. | Silver, | 426 | 2 4 0 | 0 4 6.648 | 1 15 9.904 |
| 1 Yamoo*, .. | Ditto, | 4 lbs. 4
drs. and
8 grs. | 195 0 0 | 16 5 1.920 | 166 10 8.000 |

In *Kunduz*, *Bulk*, *Khooloom*, &c. the currency is exactly as above stated, with the exception of an additional coin, the rupee (*Mahomed-shahae*), which also obtains currency there. It is larger than the *Cabul* rupee and exactly of the size of old *Heratee* rupee, weighing on an average 180 grains, or one tola of India. One hundred *Koon-doozes* (*Mahomedshahae*) rupees are equal to 118 or 120 *Cabul*

* For further particulars regarding these coins consult my paper on the Russian articles brought to *Cabul*.

rupees. They may therefore be stated to be at par with the Company's and with *Nanukshahse* rupees. In the same places a kind of brass coin of a very inferior value, called *poochhuk*, is also current; four of which are equal to a *pooli seah*. No rupees are current in *Bukhara*.

OF PESHAWUR.

To the weights, measures and coins of *Cabul* and *Bukhara* those of *Peshawur* may also be added, as that district formed lately part of the *Cabul* dominions, from which it is at present dismembered by the Sikhs. Besides being situated near the *Indus*, *Peshawur* is considered a great mart of commerce.

WEIGHTS.

The weights of *Cabul* current here during the monarchy have now fallen into disuse, and those of *Lahore* have been substituted in their room by the conquerers. The seer which weighs 102 rupees *Nanukshahse*, of $2\frac{1}{2}$ miscals, each is equivalent to 2 lbs. 9 oz. and 6.147 drams avoirdupois. The other denominations are :—

| | | | lbs. | oz. | drs. | |
|----|-----------|------------|-------|-----|--------|----------|
| 1 | Munkhanee | = 40 Seers | = 109 | 1 | 13 | English. |
| 16 | Chitah | = 1 Seer | = 2 | 9 | 6147 | |
| 96 | Tolas | = 1 Ditto | = | | Ditto. | |
| 6 | Tolas | = 1 Chitah | = 0 | 2 | 9384 | |

Jeweller's Weight.

The jewellers here use the same weight as in *Cabul*, such as the *miscal*, *nakhod*, &c. which are the same in value.

Goldsmith's Weight.

The goldsmiths employ the following in weighing gold, silver, coins, &c. &c.

| | | | |
|----|---------|-----|-------|
| 8 | Ruttees | = 1 | Masha |
| 12 | Mashas | = 1 | Tola. |

This is purely Indian weight and recently introduced from *Lahore*. The *tolas*, *ruttees*, &c. are nearly of the same value as those of India.

Cloth Measures.

The *guz i shahi* of 40 inches and *Peshawuree guz* of 32 inches were current formerly for measuring all sorts of cloths, but they have been recently supplanted by the *guz i akali* of the Sikhs. It is equal to 37 inches English and subdivided into 16 *geerahs*.

COINS.

The currency of *Peshawur* was formerly the same as that of *Cabul*; but since the conquest of it by the Sikhs, the money system has undergone a great change and become more intricate on account of the introduction of foreign coins, such as the *Nanukshahee*: *Nou Nihal-Singhee* and other rupees. The present money system is described as under.

Money Table.

| | | | |
|----|--------------------|-----|---------------------------------------|
| 4 | Kourees | = 1 | Gunda. |
| 8 | Ditto or 2 Gundas | = 1 | Adhee. |
| 2 | Adhees | = 1 | Dumree. |
| 2 | Dumrees | = 1 | Adhela. |
| 4 | Ditto or 2 Adhelas | = 1 | Pysa. |
| 4 | Pysa | = 1 | Shahee of commerce. |
| 3 | Pysa | = 1 | Anna ditto. |
| 16 | Anas or 84 Pysas | = 1 | Rupee Peshawuree chulnee of commerce. |

The different kinds of rupees current in *Peshawur*, with their weights and relative values, are as follows:—

1st. *Nanukshahee* rupee produces in *Peshawur* 24 Peshawurree annas and weighs 170-172 grains.

2nd. *Nou Nihal-Singhee* rupee, ditto 18 annas, weight 124-130 grs.

3rd. *Huri-Singhee* rupee, ditto 15 annas, weight 170 grs.

4th. *Peshawuree chulnee* or of commerce, ditto 16 annas.

5th. *Cabul* rupees, or of commerce, ditto 21 annas, ditto 147 grs.

The *Nanukshahee* rupees are at par with the kuldar or Company's rupees.

113 *Cabul* rupees are equal in currency at *Peshawur* to 100 *Nanukshahee* rupees.

122 *Peshawuree* rupees, ditto ditto to 100 ditto.

133 *Nou Nihal-Singhee* rupees, ditto ditto to 100 ditto.

160 *Huri-Singhee* rupees, ditto ditto to 100 ditto.

Lahore, 10th July, 1838.

VIII.—*Ancient Inscriptions.*

I.—The first inscription of which we are about to give an abstract translation, has been obtained and communicated by Rájá DHARMA VENKATA ASWA RAO, who has been for some time in *Calcutta*, to urge on the supreme government of India his claim to the gadi of the raj of *Palun-cha*, or *Kummmumét*, which through some recent arrangements of the Nizam's government has been assigned to a rival claimant. The inscription is stated to be engraved on a slab about six or seven feet high, which is to be found close to the temple of RUDRADEVÁ at *Warangal*, the modern name for the ancient capital of the Telingana rajas, called in this inscription *Arunakunda-pura*, or *patana*. The inscription, that is its commencement and close, excluding the Sanskrit slokas, is in an old dialect of mixed Telugu and Oorya. It is valuable as containing the genealogy of rája RUDRADEVÁ, and as showing that the previous dynasty established at *Warangal*, was overcome, and displaced by his father called *PROLI* rája. The inscription gives an authentic date also for the reign of RUDRADEVÁ in Telingana, viz. 1054 Saka, corresponding with 1132 A. D., and shows this to be the rája, called in the temple annals of *Jagannath*, *CHURANG*, or *CHORGUNGA*, who is said to have overrun *Katak*, coming from the *Carnatic*, and to have founded or established the *Gunga-vansa* dynasty, in the very year of this inscription, viz. 1054 Saka. Raja RUDRADEVÁ is mentioned as a benefactor of *Jagannath*, and *Katak* is included in the boundaries which are assigned to his dominions at that period. These are described in the inscription, as extending as far as the sea to the east; the *Sree Saila* ? mountains to the south; as far in another direction, which must be west, as *Bakataka*; while to the north, his rule extended as far as the *Malyavanta*, now perhaps the *Malyagiri*, mountain, west of *Baleswar*.

The inscription commences thus :

“ The rája RUDRADEVÁ, who obtained the five high titles, and was sovereign of *Arunakunda-pura*, king of kings, and lord of all things, virtuous, and fortunate, of the *Kákalí* race, established the three *Devatas*, *Rudreshwara*, (after his own name,) *Basudeva*, and *Suriyadeva*, in *Arunakunda-patana*, his capital city, for the continuation and spread of his dominion, in the year of Saka 1054, and in the year *Chitrabhanú* of the *Vrihaspati Chakar* or 60 years cycle of Jupiter on the 13th of Magh, a fortunate Sunday.”

Then follow three slokas, the first in praise of *HARI*, the second of *GANESHA*, the third a prayer to *SARASWATI*. The 4th sloka commences the genealogy of RUDRA NARESHWARA as given by *ACHINTENDRA*

VARA son of SRI RAMESHWARA DIKSHITA of the BHARADWAJA race.

The 5th sloka mentions rája TRIBHUVANA, a great warrior, to be the first ancestor: he was of the *Kákalya* race.

The 6th names MALA DEVA as chief of the *Kákalya* rajas, and a zealous worshipper of SHIVA, but does not mention what relationship he bore TRIBHUVANA, it is presumed he was the son.

The 7th sloka names PROLI rája as the son of MALA DEVA, a successful and illustrious king. The four following slokas allude to some of his principal achievements. First that he reduced GOVIND rája, king of *Tailapa*? gave back his kingdom to the king of *Erha**; conquered and branded the founder of *Nádha*? in *Mantra-kutnagar*, and because the *Erha* rája declined to join in the expedition, expelled him afterwards from his ráj.

(Sloka 12.) "What shall I say of the victorious PROLI rája, through whom the ruler of *Arunakunda* (*Varangal*) with its many districts was first awed into imbecility, till, taking this rája into his service, he was soon after expelled from his wide dominions."

Sloka 13 describes the chief ranee of PROLI rája, by name MUPAMA DEVI the mother of RUDRADEVA, whose praises follow in sloka 14.

Sloka 15 mentions RUDRA's victory over DOMA, a chief whose power lay in cavalry, and 16, his checking the rája MERHA? and plundering the *Pola*? country.

17 to 21, describe the ascendancy gained by BHIMA rája (half brother of RUDRADEVA), consequently upon the death of the *Gokurna* rája, the *Chorhádya* rája, and the king of *Tailapa*; that, inflated with these successes, he ventured to defy RUDRADEVA, who thereupon made preparation to meet him, (sloka 22.)

Slokas 23 and 24 describe the awe inspired by these preparations; 25, the burning of the town of *Vardhamána*†.

26 The rája BHIMA flies in terror with his family.

27. Is pursued by RUDRADEVA and the town of *Chorhádya* burnt.

28. A large tank excavated there.

29 and 30. In praise of RUDRADEVA's prowess.

* The pundits say this is not *Orissa* which always in the old dialects is written *Oordha Des*.

† This name might lead to the supposition that rája RUDRADEVA had advanced as far north as *Burhoan*, but *Choradaya* is said to be *Tanjore*, which shows that the dominions of BHIMA rája lay to the south: the *Vindhya* mountains are indeed mentioned as the northern boundary of this rája's dominions.

81. The rāja BHIMA, whose territories lay between *Kanchi* (*Conjeeveram*), and the *Vindhya* mountains, sues for protection.

82. Praise to RUDRA, who adorned and populated *Jagannath*.

The succeeding ten slokas are continuations of this praise in a very florid style.

43. Mentions *Arunakunda* (*Varangal*) as rāja RUDRA's capital, and for three slokas the praises of that city are given; then follow two slokas in praise of the king's horses, and last comes the following description of his kingdom, in the old mixed Telugu and Oorya dialect.

"His kingdom is bounded on the east by the salt sea, on the south by the *Sree-Saila* (mountains). His royal Lakshmi extends as far as *Bākataka*; and on the north she reaches the mountain *Malyawanti*."

"This king endowed this place named *Madichetapa Nilāma Khetaka*, that it might long remain undestroyed, for the worship of MAHESWAR, RAVI SOURĠ (VISHNU), in evidence of his royal duty to the gods."

प्रतापवद्रवंशावलिः ।

शक्तिः श्रीविजयश्चाभ्युदयश्च भवतु । समधिगत पद्ममहाशब्दमख्ये
 चरानुमकोष्ठपुरवरेन्द्रे परममाहेश्वरपतिहितचरितविनय विभूषण
 श्रीमन्महामख्येन्द्रेकाकतीयवद्रदेवराजकुविजयराज्यमुत्तरोत्तराभिवृ
 द्धिप्रवर्द्धमानमाचन्द्रतारार्कमुगा अनुमकोष्ठपट्टमनुन्द सुखसत्त्वा
 विनोदमनराज्यं बुद्धेयुचनुष्ट शकवर्षे वृत् १०५४ अगुनेतिचित्रभानुस
 वत्सर माघशुद्ध १३वर्षे वार मुनाडु तनपेर रुद्रेन्द्रे मनु श्रीवासुदेव
 श्रीसूर्यदेवरनुप्रतिष्ठ सेयिच्छे श्लोकः । यस्योत्तुङ्गतरङ्ग ताडित वियत्
 सप्तार्धवीर्यजलं पादाकुलनखायजघ्नमभवद्भूमख्यलोद्धारणे । दंष्ट्राकोटि
 कुटीर कोटरगतं त्रैलोक्यमन्विन्दुवद्रक्षाण्डारव रोमकूपविबरे
 वन्दे वराहं हरिं ॥ १ ॥ श्रीहेरम्ब विजय्य कुन्तलमिजम्बुद्वीपत्
 कुङ्कुमव्रातोष्णुम्भितगन्धकुम्भमधुपत्रातोत्सवस्यास्पदः । स्फीतप्रीतमना
 भवत्वमिहमे दिग्दन्तिदन्तद्युति प्रोद्धामोद्यतनैकविक्रमलसद्गताति
 कान्थाश्रय ॥ २ ॥ मातेव दुग्धजहरीभिरुदक्षतीव दुग्धोदधेरमृतवीजि
 विनिर्म्मणेव श्रीखण्डपिण्डपरिपाखुरपुत्तजीव वज्रोवसत्त्वविरतनुसरक्षती
 नः ॥ ३ ॥ भारदाज कुलश्रियः परिबद्धः श्रौतश्रियाकर्म्मठः श्रीरामेश्वर

दीक्षितो जनयिता यस्यक्षितावयवीः । सो चिन्त्येन्नववोद्योऽत पते
 शिष्योयते श्रुद्धया श्रीमद्रुद्रनरेन्द्रस्य सुमतेर्व्यंशावधिं वर्यये ॥ ४ ॥
 श्रीमन्निभुवनमहो राजा काकल्यवंशसम्भूतः । प्रवर्णरिपुवर्जनारीवैद्यस्य
 विधायकाचार्यः ॥ ५ ॥ श्रीकाकल्यनरेन्द्र वृन्दतिलको वैरीन्द्रहृत्तापकस्तत्
 पात्रे वसुदायकः प्रतिदिनं कान्तामनोरञ्जकः । दुष्कान्ताचयद्रुवकः
 पुरहर श्रीपादपद्मार्चको न्यम्भूतीकृतनायकस्त्रिभुवने श्रीमल्लदेवो वभौ
 ॥ ६ ॥ तत्पुत्रः शिवपादपद्मयुगलध्यानामृतानन्दभूर्गुण्डाको रिपुसुन्द
 रीजनमहासौभाग्यसम्पन्नियः । प्रोक्षीराज इति प्रसिद्धिमगमदैरीन्द्रद
 र्पापहा निष्ठाङ्गप्रधानप्रवन्धनमहाहङ्गारकज्ञेश्वरः ॥ ७ ॥ हस्वारोहव
 कर्मकर्मठगतिं चोपाख्यचूडामयिं शन्यद्युज्जनिवन्धसङ्करमतिं युद्धे ववन्ध
 क्षयात् ॥ ८ ॥ श्रीमत्तैलपदेवमम्बुदनिभस्तम्बेरमस्यं क्षयात् प्रस्थातो रिपुक
 ण्डखण्डनविधौ भक्तानुरागाज्जै । यो कुण्डोरिपतेरकुण्डपरशुस्तीक्ष्णा
 यधारोक्षसज्जारापातनिपातनैकचतुरं गोविन्दराजाङ्गयं ॥ ९ ॥
 वदोन्मुच्यतमैव चितिभूते राखं ददौ लीलया सुखाको विपवस्तस्य समरे वहीर
 दीक्षा गुरुः ॥

कुङ्जेनोद्धत मन्मकूटनगरी नाधोदयोनिस्त्रयो गुण्डः खलित
 एव मुखितशिराः क्रोडाङ्गवक्षस्थलः । यङ्गोडिभक्तवत्पलायनपरो
 चातोगतक्षां पुरीमाङ्गतोपि नृपेश्वरस्य पुरतः प्रौखेन युद्धाप यत् ॥ ११ ॥
 अन्यन्थानुमकोच्छनामनगरीं संवेष्ट्य योयंस्थितो नानामख्यक्षिकावितो
 भुवि जगद्देवस्य देवप्रभः । स्वव्यस्तम्भित एव कार्यकारणे शक्तः क्षयाग्नि
 र्गत श्रुतिमत्प्रोक्तपस्य तस्य जयिगः किं ब्रूमहे गौरवं ॥ १२ ॥
 देवीमुपमनामधेयसहिता यस्यागुणांस्तारकाः कीर्तिः शारदचन्द्रिकेव
 विजसत्कान्तेषु नैवोपमा । कौशल्येव च जानकीव च सती कुन्तीव
 पद्मा च सा यौगोमीव च चन्द्रिकेव च वरा तस्याभवद्भामिनी ॥ १३ ॥
 तस्यास्तस्य सुतोजनीह परमानन्दैककन्दाङ्गरः कामः किं नखजूवर
 शिवसुतःकन्दो जयन्तोऽथवा । जिह्मवृषधरोऽथवा हरिरवं
 दक्षौजुमारौ स तौ भक्तश्रीगिरिषे हिताय जगतश्रीवज्रदेवोऽपः ॥ १४ ॥

मोक्षस्तुतुरमुद्रमुद्रवचवारोह त्रियाकर्म्मठं डोमं चावपराक्रममक्रमभरं
 भक्त्यासक्तलीलाया । कथं पार्थ इवाजरे शूरशतैर्विद्राव्य विद्राव्य यो जेमे
 सर्वविशेषयुक्तनगरयामं स रजो नयः ॥ १५ ॥ इंदेमेडविडम्बिडम्बर
 भरतोदक्षमं आभ्यतां दुर्भारोडुरवीरमन्वसमयादानेकदीक्षागुवं ।
 श्रीमन्मैत्रिदेवसङ्गसमयप्रोद्भूतदर्पापहं प्राप्तश्रीपोषवासदेश विभवं
 श्रीवज्रदेवं सदा ॥ १६ ॥ भीमेन भीमेनकुजेन कुजेन हीनो यत्सोममार
 गृहमूषकवत् क्षणेन । मार्जार डिम्बकवरेण महान्धकारे गोकर्षणा-
 मभुज गो भुवि शूरमानी ॥ १७ ॥ श्रीमद्रुद्रपराक्रमोद्भवभयव्या-
 मोहनाख्योक्तसङ्गसमयसमोचविजयसोडोदयआभ्यतः । उन्मत्ता
 इव विस्मृता इव महाभूताभिभूता इव प्रोद्भूता इव संकुणा इव
 तदा प्राणाः प्रयाता दिवं ॥ १८ ॥ यातेऽपि तैजपट्टपे दिवमस्य
 भीत्या सर्वान्तिसारकवनीकृतगात्रयष्टौ । श्रीवज्रदेववन्द्यतेः पृथु
 विक्रमस्य भीमोऽपि राज्यपदवीं क्षत्रिकां स जेमे ॥ १९ ॥ ऐको जम्बु
 ऋद्धिम्भको जम्बुतरैस्त्रिवेष्टितो जम्बुके राजाहृष्टृतिधिक्कृतक्षिति
 तजस्विहेन संसर्जते । भेता जाकुलगर्जितैर्मुखरवन् सर्वा दिशो
 विह्वलो यातः क्षापि स इव धूननभरैः कण्ठीरवस्यातुरः ॥ २० ॥
 तदङ्गीमष्टपाद्यमो नरपशुर्मातुल्यपत्नीसुतो हन्ता आटवरस्य भोजन
 विधौ भीमेन संसर्जते । आकाशयसनप्रयासनिरतश्रीवज्रदेवेन यत्
 स्वर्क्षावर्जितगर्भपर्वतमहाशङ्काग्रमारोहते ॥ २१ ॥ श्रुत्वा भीम
 वृषस्य राज्यविभवं चारैश्च दुस्त्रेष्टितं श्रीमद्रुद्रनरेन्द्रेऽथविजयप्रारम्भ
 सम्भारभाक् । यातोजातरिपुक्षमयष्टतना मेकावखो योजितः
 सद्यस्त्राजवनाम्बितः प्रमुदितश्रीघ्नं श्रियै निर्गतः ॥ २२ ॥ यत्सोर्वी
 विजयप्रयासमये गम्भीरमेरीभवङ्गाङ्गारोद्भवसंभ्रमक्षतिकरव्याजम्भ
 खोदेगतः । अश्वन्यम्भयाश्चकन्यवनयो आन्धक्यमी भूधराः कूर्मो
 आन्धति मुञ्चति विरशनः कुण्डन्ति दिक्कुञ्जराः ॥ २३ ॥ कोशाग-
 मेहेव्यमनु पथि करितुरमान् वान्धवानर्जमार्गे दुर्गेव्यन्तः पुराणि
 प्रतिभयचकिता वज्रदेवस्य भीत्या । यत्सोदेव्यभमनाः समरसमयसा

रम्भमन्वीरभेदीभाङ्गाराक्षीर्ष्वर्ष्वरभरतरचाः प्रोच्छिताङ्गाः चि
तोङ्गाः ॥ २३ ॥ मत्वा जवालिपतुरात्रि पदात्रि राजा शस्यस्य सख्यनमिव
प्रथमाञ्जतिम्बा । भूमङ्गवीक्ष्यविदर्जित कोपवर्षो वद्वर्जमानमरी
प्रथमं जुहाव ॥ २४ ॥ यस्याक्षिबीक्ष्यभवाचक्षितस्य भोमो दुर्वो
धनस्य नृपते रिव विष्णुकाङ्कः । खभाहमाहवनितासहितस्यमयचक्षीं
विहाय वनमेव ययौ विवक्षः ॥ २५ ॥ तत् पृष्ठतो नृ च जगाम
ददाह राजघोहोदयस्य नमरीममरीयसीतां । चङ्गामिबामरपुरी
सदृशीं नृगाक्षीश्रेयोविनासकणितामिव चाङ्गनेयः ॥ २६ ॥ लुण्ठव
च वनं तस्य दुर्ममर्गनविभ्रमं तठाममकरोत्तत्र पुरमध्यैकृतं महत्
॥ २७ ॥ कण्डूरोदयघोषनंशविजसत्क्षीराब्धिर्मर्भोद्भवत्पद्मेकाश्व
वद्रेवन्टपतेः किं वर्यते विक्रमः । क्षुद्रकात्र कुलोन्वतिक्षयक्षतः सर्वा
वनीश्रीमृतो रामस्येव कुठारखण्डितरिपुत्रातस्य पृथ्वीपतेः ॥ २८ ॥
रङ्गपुङ्गुतुरङ्गपुङ्गवसुरक्षुषं जगन्मखणं ज्योत्स्नोक्षासि सदातपत्रनिकर
व्याप्तं नभोमखणं । पुर्णैन्दूत्करचारवचामरचयैर्दिक्खणं सम्भृतं दृष्टा
सैन्यविनिर्गमं नरपतेः प्रादुर्भुवः शत्रवः ॥ २९ ॥ काक्षीमखणविन्ध्यमध
निलया भीमादयः पार्थिवा यस्य ओषपथंगता खहरहृष्ट्रीवद्रेवस्य ते ।
दृष्टैवानिमिषा वभूवुरमरीवर्गस्य मर्त्याश्चिरं प्रत्यावृत्त्य तमेव वद्रेवपतिं
प्राप्ताश्रयार्थार्थिनः ॥ ३० ॥ वद्रे सौमि नरेश्वरं वद्रेवतानेकत्रिवो
भाजनं कृत्वा यस्य कदापि चेतसि मदाशङ्गा न संक्रामते । चावसी
पुत्रघोत्तमं कलकलैः कृत्वा श्रियोभाजनं वीचीनां कुवतेऽधुनापि वसुधा
मुज्जामरां सागरः ॥ ३१ ॥ न्यग्भूतोक्तत राजहंसनिकरः पयोद्भवैकाश्व
यश्चक्षुर्विद्वत्तुराग्नो वृधवरागन्दैकहेतुर्भृशः । नानाशास्त्रविचारवैक
चतुरो ब्राह्मीविनासाश्रयः कल्पात्क्षिप्तगतिः क्षिताविहङ्गतामन्दः खवं
पार्थिवः ॥ ३२ ॥ सत्यासक्तमना निरक्तनरकलोक्षश्च कल्पशाश्रवः पृथ्वी
मृज्जुजगेन्द्रभोगनिलयश्चन्द्रहिजेन्द्रप्रियः । दुष्टारिष्टविमर्दनक्षुमनसामन्व
र्थितार्थप्रदो गोत्रप्रोद्भवास्तुदर्शनकरो वद्रेवस्थं कैत्रवः ॥ ३३ ॥
असम समरसङ्गोत्तुङ्गमातङ्गकुम्भखणविदक्षितमुक्ताहारभाराभिरामः ।

भवभवभरभरुक्ता भाभिनीभचनेचोत्पदचभवभूवःश्रोभते ब्रह्मदेवः॥३५॥
 अस्मिन् प्रशासति महीं भुवि ब्रह्मदेवे राजाभिधाञ्जिनि नैव नरोत्तमेव
 ईश्वरमिन्दुतिषणे न घनाकुञ्जेव तेजसितादिनकरे नच शाशवेव । ३६॥
 केचनहस्तुरतसंग्रहसंभमेवुदंठयहो यतिषु नैव जनोत्करेव । शास्त्रे
 विवादक्षयनं व्यवहारके न नक्तापि दुष्टमथनं मथननवरथा । ३७॥
 दानं दैन्यपराभवावधि रिपुहेदावधिर्विक्रमश्चातुर्थं चतुरागनावधि
 जुषयामस्वसंस्थावधिः । तेजोभास्वरतापनावधि यशोराशितु ब्रह्मस्य
 यत् त्रैलोक्याक्रमजावधिर्निरवधिर्धर्ममतिः श्रोभते । ३८॥ प्राप्ताशोपि
 महत्तरोपि महतामेकाग्रयोपि भियो जन्मस्थानमपि प्रसन्नहृदपि त्वं
 रत्नघामापि सन् पीतः कुम्भसमुद्भवेन जलधे चारः समुद्रोः यतो
 नैवं ब्रह्मरेश्वरोयममुनास्यर्द्धा वृथा माकृथाः । ३९॥ चौदर्थ्यं
 सुरसास्त्रिं श्लिखरिखस्त्र्यर्थाकृतैर्गौरवं धैर्यंदाशरथे र्भक्तंपुरभिदे
 गाम्भीर्यमम्भो निघ्ने । सौन्दर्यं मकरध्वजात् सुरगुरोर्विद्यारतिं
 कौतुकादादा याज समुद्भवेनरचितश्रीर्ब्रह्मदेवो भुवं । ४०॥
 स्फावत्कैववतीन्दु रन्वजपतिस्फुटान्ज त्यटन्वरं सोलंणीनसरोजति
 स्फुटयशो दुग्मान्धौ संप्रति । ज्योतीर्विस्फुट बुद्बुदन्ति
 हरितः कूषन्ति लोकास्त्रय स्रष्टुदीचिचयन्ति यस्य जयति
 श्रीब्रह्मदेवोभुवं । ४१॥ पादन्यासप्रियाशिरांसि समरे कृतानि
 खड्गेन यक्षचूडां पतितानि मांसविकसत्पद्मेय शङ्खेह्यहं । रक्त खोतसि
 ब्रह्मदेवजयिनो नृत्यत्कवन्धे तदा ह्यायन्वा विजयश्रियश्च सविधं
 कीर्तिः प्रयान्वादिशः । ४२॥ तस्यास्तेऽनुमकोद्धनामनगरी श्रीराज-
 धानीववायजोद्यत्सदसखलखण्डपरमुद्यान्ध्रम्योज्ज्वलभिता । कन्दर्पस्य
 पुरीव सा रतिमती शृङ्गारभावान्विता माहेन्नीव च जिह्वु
 विह्वसहिता रम्भाविजासोर्जिता ॥ ४३॥ यजत्तिषो मकरकेतनराज
 धान्य आनीलनीरजपलाशदृशःकृष्णः । त्रैलोक्यसुन्दरदृशां तिष
 कायमागा आपीनतुङ्गकुचकुम्भभराणसाङ्गः । ४४॥ यज विजेन्द्रभवनेषु
 निवार्यमायाः कीराः पठन्ति पठवो वटुभिः समेताः । सर्व्वाङ्गसङ्गत
 समकविचारचारुचारिचर्चित पदक्रमयुक्तवेदान् । ४५॥ वेश्यागृहे

वु सुरतोत्सवजातचेष्टा ब्रह्मानुकारिशुक्लशावकचोदब्रह्माः । सन्म
 दिष्टो मुखरयन्ति दिवा विटानां कन्दर्पदर्पतरकाशंवपूर्वचन्द्राः ॥ ४६ ॥
 नातिज्ञामति वैश्वं यदमिति स्थां मौरिति स्थाभिमां यादैस्त्वन्वि
 नो तुरङ्गमचयभीदददेवस्य यः । सन्मज्ञाः परिपूरयन्विजयते ख्येव
 सन्मीययच्छून् युद्धमहीतके प्रतिदिनं विज्रावयन्मारवन् ॥ ४७ ॥
 अतिरमब्रह्मरीरा ये च गोचखराष्ट्रास्त्वत्तुरगश्चोद्भासिसहस्र
 बाष्ठाः । अवभरभरिताङ्गास्त्वत्सम्पन्नमावा अतिचिरतरजीवाः यश्च
 धारास्तुरङ्गाः ॥ ४८ ॥ राज्यं प्राच्यां खवज्जलधेतोरपर्यन्तमस्य श्रीशैवा
 न्नां प्रचरति सदा दक्षिणस्यां समयं । प्रातीच्यां वाक्कटकविकटका
 विगी राजकक्षीं कैवेर्याज्ञातटविलसिता मात्यवन्तं प्रपेदे ॥ ४९ ॥
 अर्चनायमिहदत्तवान्महामहिषेटपरिणामखेटकं । श्रीमहेष्ट रवि
 सौरिणां स्थिरं सद्देवव्यधर्मन्तन्वतां ॥ ५० ॥ इदं शासनं राज्ञा
 रामान्धरायेव लिखितं ।

II.—The next abstract translation we shall present to our readers is of a very old copper grant, made by a *rāja* of the Gajjara race named PRASANGA *rāja*, grandson of SAMANTA DATTA, and which bears the date of the full moon of Kartika in the Sambat year 380—A. D. 323. The seal of copper has the grandfather's name.

This very ancient and curious grant is one of several communicated by Dr. A. BURNS from *Kaira* in *Gujrat*. Dr. BURNS gives the following account of the manner in which the *Tamba-patras* were found. "The Plates, of which I enclose a copy" (he subsequently sent also facsimiles) "were found in the town of *Kaira*, about ten years ago. The river *Watrua* runs close to the walls on the north-west side, and was the cause of the discovery by washing down the walls and earth. They had been handed about the country among the natives for translation, it being supposed they were connected with some deposit of treasure. At last they were brought to me by a *Fakir*, of whom I purchased them." Dr. BURNS has sent transcripts and facsimiles of four plates, all of the beginning of the fourth century. That we now give is No. 4, and not the most ancient; but it was the first decyphered by Mr. JAS. PRINSEP, and transcribed by him in Devanāgarī. The original is in the character of the fourth line of the alphabet plates of this volume,

corresponding with that ascertained from inscriptions and coins to have been in use in *Gujrat* at the period of the date of these grants. Their antiquity is thus assured, but part of the singularity of this particular one consists in the style of the eulogium of the *rāja* and his ancestors who made the grant, every word of which has a double meaning. The grant is in Sanskrit prose, upon the model of the *Kadamvari* by *BANA BHATTA*, and has been explained and commented upon at length by the Pandit *KAMALÁKÁNTA*, who regards it as a wonderful composition. It is impossible to give this explanation in these pages, for the eulogistic part of the grant, being in this double-meaning style cannot be translated, the English language not admitting of the same amphibologies.

The play upon words commences from the first sentence, which plainly translated implies, "There was a person named *SAMANTA DATTA*, born with fortunate auspices in the royal race of *Gajjara*;" but these words admit also of translation: "There was a boundless ocean named *Gajjara*," and this original double meaning has led to the use of epithets and qualities for the *rāja*, which will hold equally, with different meanings, as applicable to the *Gajjara* ocean. After wearing out the ocean amphibology, serpents, elephants, and women are pressed into the service by the ingenious conveyancer, who drew this deed; and it is a pity that such a happy device for multiplying mystifying words cannot be more fully explained, for the benefit of the practitioners in Chancery lane, who might find their advantage in imitating it.

Our business however is with the matter of the grant, and the historical facts deducible from this very ancient record. Dismissing therefore the prefatory eulogy to *SAMANTA DATTA* of the *Gajjara* line, who will be admitted to be a *rāja* without such proof, the grant proceeds:

"His son was *VIJAYA-BHATTA*, whose other name was *VITA rāja*, who was beautiful like burnt gold," &c. &c.

Then follow his praises in the same florid amphibological style: The close is peculiar: "His personal beauty prevented not the maturity of his good dispositions, nor his youth the practice of strict morality, nor his wealth its generous distribution, nor his *triwarga* (that is his enjoyment of love, morality and wealth), the practice of austere devotion; his exercise of sovereignty prevented not his delighting to show mercy, nor his living in the *Kali yog* the possession of all virtue."

We come now to another historical fact. "His prosperous son named *PRASANGA rāja DATTA*, who covered the airy sphere with the canopy of his fame like water-lilies blown to fullness by the beams of the full moon," &c. &c. &c., "and who proved his possession of winning

grace, by bringing angry women to love him through the force of his bowing and sweet words," &c. &c., "announces to all possessors of estates in their own right, and to all managers of the royal lands, and to the village proprietors—Be it known to all of you," (a conveyancer of the present day would write "Now know ye,") that we (the said *rāja* *PAASANGA RAJA DATTA*) in the full moon of Kartik, out of respect for those who are versed in the four Vedas, and consecrated with (holy) water, have presented to A. B. (the names are not legible) inhabitants of *Girisha padraka* in the district of *Angkureswara*, and to B. C. the village named *Sirisha padrakanlash*, for worship of the five *Jagnas*, *Bali*, *Charu*, *Baiswadeva*, and *Agnihotra*, and for increase of the virtue and fame of our father, our mother, and ourself; that the said village with all the rich produce it affords, may be enjoyed by the said grantees, their sons, grandsons and posterity, as long as the sun, and moon, and the ocean, and the earth shall endure.

"After this, let future *rājas* of our race, or of any other race, that may desire to secure to themselves the eternal fame, beautiful as the moon-beam, which attaches to donors of lands, reflect that life and wealth are fickle as waves of the sea urged by a strong wind; while fame, earned by good deeds is durable without limit; and so let them respect this grant, and confirm the grantees in possession. He only, whose mind is blackened by the darkness of ignorance, will resume it, or be pleased at seeing others molest its possessors—reckless of the guilt of the five deadly sins, and of other heinous crimes, as described at length in the *Vēda Byasa*.

"He who grants lands, lives 60,000 years in heaven; but he who confiscates or resumes, or allows others to do so, is doomed to hell for a like period.

"The resumers of grants become as black serpents that dwell in holes in the Vindhya forest. The earth has been enjoyed by many kings, as the *Sagara* *rāja* and others, and each in his turn has ruled as a despot lord of all. But what generous man will take again the grants made by *rājas* who have gone before him, and whose gifts are like wreaths of flowers once used, spreading the fragrance of a good name, and of the reputation for wealth and virtue*.

"By the order of the *rāja's* own mouth this grant has been written by *REWA*, a servant well tried in peace and in war, in the full moon of Kartika of the Sambat year (of *VIKRAMADITYA*) 380."

* The correspondence of the terms in which this grant closes, with the latter part of the grant obtained by Mr. R. JENKINS in *Chattisgarh*, as given in vol. XV. of the *Asiatic Researches*, will not fail to strike the reader. The character of that grant seems to be of higher antiquity than was then assigned to it by Dr. Wilson.

- 1 अक्षि गान्धि प्रभूतविविधविमलमुखरत्नसंपदुद्गाधिवसकणदि
कुले परिचातामेवसप्ररमहामहीम्वति सप्ततमविषाङ्ग
- 2 तावधौ खैर्भगांभीर्भवावच्छाति महासत्त्वतयातिदुरवगाहे मुर्जर
रूपतिवन्ध महेदधौ श्रीसङ्गन्मा कञ्चुदयाहिता
- 3 स्पदः कौस्तुभमखिरिव विमलयशोदीधितिविकरविनिहस्तकणि
विमिरनिचयः सत्प्रसोवैगतेय इवाकुरुशुभनामकुलसंसति
- 4 रत्नपतिजन्मदिनकरचरत्नकमलप्रभामप्रसीतामेवदुरितनिवहा सा-
मन्तदत्तः प्रतिदिनमपेतश्रृङ्गं येनस्थितमचल
- 5 मुखनिकरकेसरिविराजितवपुष्पा विनिहृतादिमजकुम्भविमणित
मुक्ताफलच्छलप्रकीर्णविमलयशोबितामेन रूपानुरूप
- 6 पसत्त्वमुदहता केसरिविशोदकेखेवोपरिस्थितिभृतां चातिमणि
कणियुग्मतिमिरचन्द्रमसमनुदिवसमन्धोन्मस्यर्द्धयेव ॥
- 7 ययुःकलासमूहादयो मुखा विक्रमानीतमदविकासाणसमस्योराति
मजघटाः प्रमदाच्च यस्यचाविरत
- 8 दानप्रवाहप्रोक्षितात्थिमधुकरकुलस्य वधिरकीर्णवला सहायस्य
सततसत्स्थितपदप्रसरतः सहस्राहितशोभा
- 9 गौरवस्य भद्रमतंमजस्येवकारघातविनिहृतक्षितिभृदुन्नततनूरूह
स्य देवानिष्कर्तृसलिल प्रपातमधुरनिन्दस्य
- 10 भद्रोदयाः समुन्नतपयोधराहितश्रियोदयिता इवमुदे विन्मगोप
ल्लकायस्योपमीयते शशिनिसोम्यत्ववेमल्यशोभाक
- 11 चाभिर्गङ्गलङ्गेन श्रीनिकेते शोभासमुदयाधः कृतकुलकण्टकतया
कमलाकदे न पङ्कजन्तया । सत्त्वोत्साहविक्रमैर्भे
- 12 माधिराजे न क्रूराश्रयतया । कावस्यखैर्भगांभीर्भवावच्छातिगुणाचन
वया महेदधौ न व्याकाश्रयतया । सत्करुणस
- 13 मुन्नत विद्याधरावासतया हिमाचले न खड्गपरिवारतया । कस्यच
सङ्कोगः प्रघोरमजस्येव विमल किरणमखिशताविष्कृत
- 14 गौरवस्यकधारवतया यस्य प्रकाशतेखकुलशोभेन । प्रभुत्वमाश्रया ।

- प्रसन्नमराति प्रविपातेन । कोपोनियहेव ।
- 15 प्रसादः प्रदानैर्ब्रह्मदेविजातिगुब्जनसपर्व्वेति । तस्यसूनुः
प्र तप्तचिरकनकावदातः कल्पतर्वाविरतम
- 16 तिस्रिचिरकप्रदः सततमृतुगवस्येववसन्तसमयोवसन्तसमवस्येव
प्रविकसित निविडधूततववनाभाजः सरस इव
- 17 कमलनिवहः कमलनिवहस्येव प्रबोधामहाविधधरस्येवमन्त्रिर्मन्त्रे
रिव स्रष्टारभावो महोदधेरिवामृतककसोमृतक
- 18 कसस्येवामरवदायित्वप्रभावः करिष्य इव मदः प्रमदाजनस्येव
विकासोविभवस्येव सत्पात्रविनियोगो धर्म
- 19 स्येव क्रतुः क्रतोरिव सदक्षिणकामः प्रेक्ष इव सङ्क्रावः अग्नि इवा
मलकलासमूहो नियतमलङ्कारभूतः सकल
- 20 निष्ठाकराभिरूपवदनः प्रज्ञोवदान्यः प्रवर्त्तरिपुत्राणीकसमर
समवाप्तविजय श्रीः श्रीवीतरामापर नामा श्री जवभ
- 21 टःकलिमकरहितः प्रतिपद्य भयाचरवार्त्तिन इव यमान्विताः
सविनयागुग्वाः स्फुरितविमल कीर्त्तिसौदामिनो नायकेनसकलजो
- 22 वलोकानन्दकारिषा कालवलाहकेनेवावन्धपलमर्ज्जनात् प्रवर्त्तिना
मपनीतास्तृष्णासन्तापदोषाः वक्ष्य भूरोपिसततं
- 23 यज्ञोभिरपगततर्षोपिगुग्वाज्ज्जनाविष्टिन्नतर्षः सर्व्वप्रदान श्रीजो
पिपरयुवतिहृदयदानपराङ्मुखः पटुरपि प
- 24 रपरिवादाभिधान जडधीः यस्य वक्त्रंविरोधि श्रीलस्य यौवनं
सदृप्तस्य विभवःप्रदानस्य त्रिवर्णाः सेवापरस्य
- 25 प्रभुत्वं क्षान्तो कलिकाजो गुब्जनमितस्येतितस्यसूनुः सज्जघनपटल
निर्गन्ध रजनिकरकरावबोधित कुवलय
- 26 यज्ञःप्रतानव्यगितनभोमख्खोनेकसमर प्रकटप्रभुतागत निह
तश्चनु सामन्त कुलवधू प्रिय
- 27 रुदितच्छोद्रीयमान विमलनिस्त्रिंश प्रतापो देवदिजाति गुब्
चरवक्त्रमल प्रथामनतश्चिरो

- 28 मन्त्रि चोदितचिरदीप्ति विराजित मुकुटोद्भासित शिरादीनाना
यातुराभ्यामतात्त्र्यजनास्त्रिष्ट सूचित
- 29 विभवोमनोरथोपचीवमानत्रिविष्टपैकसहायधर्मसंचयः प्रबय
परिकुपित
- 30 मानिनीजनप्रबयपूर्वमधुरवचनप्रापितप्रसादप्रकाशीकृतविदग्ध
नागरक
- 31 स्वभावो विमलमुखकिरगर्भंजराहतवज्रकणितिमिरनिघयः सम-
धिगत तापसमहाशब्द' हृन्दाः प्रशाङ्गरागः
- 32 कुशलीसर्वानेव राजा सामन्त भोगिकविषयप्रतिद्वयाममहत
राधिकारिकादीन्समनुबोध
- 33 यत्नस्तुवोविदितमस्माभिरङ्गुदेवरविषयान्तर्गतशिरदीपप्रकाश
ग्रामः सोदङ्गः सोपरिकरः
- 34 सर्वदानसंग्राहः (सर्वदित्यविष्टिप्रातिभेदिका परिशीलाभूमिष्टि
ग्रन्थायेनावाटभटप्रावेश) आचन्द्रार्काख्य
- 35 क्षितिस्थितिसमन्ताधीनः पुत्रपौत्रान्वयभोग्योमंभूसरोविनिम्नताङ्ग
देखरविषयान्तर्गतमिरिष्टपत्रकवासिबद्धाच
- 36 वत्ससमोचान्वयायनसत्रज्ञचारित्राज्ञबभट्टाद्यापक तथाभट्टिगव
विशाल अभिषर्म्म श्रेयकाश्रमस
- 37 गोचरभट्टिदाम तथावन्न अभ्यर्गुवाजसनेयदौख्यीयसमोच कणवत्
त्रज्ञचारित्राज्ञव्यतापि शर्म्म जितापिशर्म्म
- 38 दत्तस्त्रामि भोगिस्त्रामि मित्रशर्म्म भट्टि श्रेय धून्नायवसमोची
कर्माग्याप कक सुवृक्षबौद्धिन्वसमोचवाटशर्म्म श्रव
- 39 घोष महादेव बाब माधरसमोचधरविशाल नन्दि रामिक हारती
समोचधर्म्मधर हान्दोग्यभरज्ञानसमाचबौधुम
- 40 सत्रज्ञचारित्राज्ञबहन्त्रशर्म्मसूदित्यरवितादिशर्म्महन्त्रगूर हंशर
शर दाम दि हंशरभरकण्वविनिम्नतभेरजिका

- 41 निवासि अथर्म्मबोधोक्तिसर्गेत्रपिप्यजादसत्रस्यचारिप्राप्त्यभमत्रवावु
 श्रर्मं श्रेष्ठस्वामिबन्नादित्य पूर्वस्वामिबन्धमतु
- 42 अरबन्नास्येभ्यसातुर्विंशपरिकल्पनापूर्व्वेनविचरवैन्देवादिहोत्र
 पंचमहायजादिक्रियोत्सर्पांशार्थमातापित्रोरात्मनश्च पु
- 43 स्वयशोभिवृद्धये कार्त्तिक्यामुदकविसर्गेनविष्कृष्टास्तोत्रदंष्ट्रैरन्यै
 ब्राह्मिभोगपतिभिः प्रवक्ष्यपवनप्रेरितोदधिजलतरं
- 44 मघचक्षंजीवनोपरमभावानुगतानसाराग्विभवान्दीर्घकाचस्यवशस
 खगुब्जानाकक्षस्यसामान्यभोगभूप्रदानकक्षेषु
- 45 भिः शशिकरचिरं यशस्विरायचिचिषुभिरयमस्रष्टावोनुमन्तस्यः
 पाकवितथश्च यो बाह्यागनतिमिरपटजावृतमति
- 46 राक्षिन्ध्यादादिद्यमानकं वानुमोदेतसपंचमिर्म्महापातकैः सोपपा-
 तकै संयुक्तः स्यात्उक्तञ्च भगवता वेदथासेन
- 47 व्यासेन । षष्ठिवर्षसहस्राणि खर्मेतिहृति भूषिदः उच्छेता चानु
 मन्ता च तान्येव नरकं वसेत् । विन्वाटवीज्यतोयासु
- 48 शुक्लकोटरवासिनः क्षव्याहयो हि जायन्ते भूमिदायं हरन्ति वे ।
 वज्रभिर्म्मसुधा दत्ता राजभिः सरादिभिः यस्य य
- 49 स्व यदाभूमिस्तस्य तस्य तदायुजं । यागीह दत्तानि पुरा नरेन्द्रेदा
 नानिधन्मार्त्ययशस्कराणि । निर्भुक्तमात्यप्रतिमा
- 50 निभानि कौ नाम साधुः पुनराददीतेति । संवत्तरशतत्रये श्रीच
 धिके कार्त्तिकशुक्लपक्षदश्यां निखितं सन्धिविग्रहाधिक
- 51 रखाधिकृतरेवेखसमुखाचवेति । सं १०॥ कार्त्तिकशुक्लेना दिन
 करचरवार्चनगतस्य श्रीवीतरागसूनुः सहस्रोयं प्रशादुराग्नस्य ।
 सामन्तदत्तः
 तस्यपुत्रः वीतरागापरनामा श्रीजयभटः
 तस्यपुत्रः प्रशादुरागः प्राज्ञेभ्यो भूमिंददै

Note.—The marginal numbers mark the lines of the copper plates. We owe Dr. BURNS an apology for not transferring his copy, which is perfect, to a lithographed plate. In the following number we propose to give another of these grants in its original shape, that the character may bear its own testimony to their antiquity; but time, and the number of other plates has prevented the doing so with this specimen.

IX.—*Proceedings of the Asiatic Society.**Wednesday Evening, the 14th November, 1838.*

The Hon'ble Sir EDWARD RYAN, President, in the chair.

Before proceeding to the general business of the meeting, the President rose and stated, that he held in his hand a letter from the Secretary, Mr. JAMES PRINSEP, the substance of which must be a source of deep regret to every member of the Society, for every one must feel the loss the Society had suffered in the departure of its Secretary, Mr. JAMES PRINSEP. He assured the meeting, however, and he spoke on the authority of a conversation he had with Mr. PRINSEP, before his departure, that this gentleman's absence from India would be but for a short period, and that on his return he would be ready to take the same interest, and to display the same zeal and anxiety, which had so honorably distinguished his discharge of the important duties he had undertaken in connexion with the Society. The President said, that the objects of the Society, had under Mr. PRINSEP's able superintendence, been prosecuted with a vigour, which had added largely to its credit and reputation; and that the results produced in every department of science and literature, for which the Society was indebted chiefly to its Secretary's activity and varied powers, had sustained its character in a manner, rivalling the periods when it derived renown from the labours of a JONES, a COLEBROOKE, and a WILSON. The President took occasion to add, that, in the time of Mr. JAMES PRINSEP, and on his proposition, the name of the Society had been associated with a monthly periodical, established by the late Captain HERBERT, originally under the name of the *Gleanings in Science*. The work was afterwards extended and ably conducted by Mr. PRINSEP himself; and at his suggestion it was resolved in 1831, that so long as this periodical should be conducted by a Secretary of the Society, it should bear the title of "*Journal of the Asiatic Society*;" under that name, it had been since continued by Mr. PRINSEP with very distinguished success to the present day. The Society had no property in the *Journal*, and no right to prevent Mr. PRINSEP from separating it again from the Society, and conducting it on his own account; but he had no such intention. He (Sir E. RYAN) had ascertained that Mr. JAS. PRINSEP had made arrangements for its being continued to the end of the present year from materials in hand; and after that, he meant that *his* series should be closed; but he had no objection to the Society's continuing the periodical by the same name under other management as a concern quite independent.

Now he (the President) believed, that all the members of the Society would regret exceedingly that a periodical so established, and which had acquired such credit and consideration, should be discontinued. He trusted that it would be resumed by Mr. J. PRINSEP himself, when he returned to India; but in the mean time he should submit to the meeting the propriety of taking into consideration the possibility of making some arrangements to carry it on during Mr. PRINSEP's absence.

Having premised thus much, the President stated, that he should read to the meeting Mr. JAMES PRINSEP's letter, placing the situation of Secretary at their disposal: but as he had no doubt it would be the unanimous feeling of the meeting to desire to retain Mr. PRINSEP in official connexion with the Society, he should not consider this letter as an absolute resignation, but should propose a resolution, and submit arrangements founded upon it, which would enable Mr. PRINSEP to resume the office on his return to India.

The President then read the following letter:

To the Hon'ble Sir EDWARD RYAN, Kt., President of the Asiatic Society.

HON'BLE SIR,

Being compelled by ill-health to proceed to sea and eventually to Europe, I have taken my passage on board the *Herefordshire*, with the intention of being absent from the country for two, or perhaps three years. I am thus under the necessity of placing at the disposal of the Society the situation of its Secretary, which I have filled for five years.

It is with great reluctance and regret that I thus separate myself from a body, with whom I have been associated in labours of much interest and utility, whose favor has encouraged my zeal, and through whose credit and reputation in the world, I have obtained the means of making generally known my own humble efforts in the cause of science, and my not unsuccessful endeavours to explore the antiquities of the country, to whose service we are devoted.

But the disability of sickness is an accident, to which we are all liable, and from which there is no resource, but in temporary departure to a better climate. I am thus compelled to leave my incomplete labours to be perfected by others; and to relinquish the place I have held in the Society, that provision may be made for its competent discharge under the failure of my own power of longer rendering useful service.

1st November, 1838.

I have the honor to be, &c.

(Signed)

JAMES PRINSEP.

Proposed by the President, seconded by Mr. CURNIN, and unanimously resolved,—That the resignation of Mr. JAMES PRINSEP be not accepted; but the Society hope that he will return to resume the situation of Secretary, which he had filled so much to the credit of the Society for a period of five years.

Resolved,—That the President communicate to Mr. JAMES PRINSEP the desire of the Society, that he shall not consider himself as having vacated the situation of Secretary to the Society; and express the hope, that on his return to India he will resume the situation of Secretary.

That, during the absence of the Secretary, a temporary arrangement be made for conducting the Secretary's duties, the same to cease upon his return and resumption of the office.

That, during the temporary absence of Mr. JAMES PRINSEP, the Rev. Mr. MALAN, Dr. O'SHAUGHNESSY and Babu RAMOOMUL SEN be requested to act as joint Secretaries of the Asiatic Society.

That, for the purpose of carrying on the financial affairs of the Society, a committee be appointed, consisting of the President, the Secretaries, and Mr. W. P. GRANT.

That the Secretaries of the Society be requested to report, whether at the expiration of the current year they are willing to carry on a new series of the *Journal of the Asiatic Society*, and submit to the next meeting a plan for that purpose.

Mr. JAMES MIDDLETON, proposed at the last meeting, was balloted for and duly elected a member of the Society.

Read a letter from Lieut. J. DUNCAN, acknowledging his election as an ordinary member of the Society.

Ditto from Monsieur JAUBERT, President of the Geographical Society of Paris, acknowledging his election as an honorary member.

Library.

Read a letter from J. BELL, Esq., Secretary to the Agricultural and Horticultural Society, forwarding, for presentation on behalf of the Society, three pamphlets, Nos. 1, 2, and 3 on Cochineal.

The following books were presented :

Notes on the Agricultural and Rural Economy of the Valley of Nipal, by Dr. A. CAMPBELL of Nipal—by the Author, through the Hon'ble Col. W. MORISON.

Barometrical and Thermometrical Observations—ditto by ditto.

Hourly observations during the last summer at ditto—by ditto.

Memoires sur Quelques Coquilles Fluviales at terrestres D'Amerique per Stefano Moricard, Ceretrail des Memoires de la Societé de Physique et d'Histoire Naturelle de Geneve, 1833-34—by the Author.

The Oriental Christian Spectator, October, 1838—by Rev. J. WILSON BENSLLEY.

Madras Journal of Science, No. 20—by the Madras Literary Society.

The following from the Booksellers :

Lardner's Cabinet Cyclopaedia (Biography), Eminent Foreign Statesmen, vol. 5.

Ditto ditto (History), Greece, vol. 5.

TORRENS's Translation of the book entitled The One Thousand Nights and One Night, vol. I., five copies—subscribed by the Society.

Literary and Antiquities.

Read a letter from Mr. Secretary PRINSEP, forwarding copy of a Report on the Weights, Measures, and Coins of *Câbul* and *Bukhâra*, compiled by NOWROJEE FURDOONJEE.

[NOTE.—This Report is printed in the present number of the Journal.]

Lieut. G. C. HELMBRIGS, presenting his translation of certain chapters of the *Akhlaqi Jalkile*, from the Persian into Hindi and English.

Read a letter from Mr. W. T. LEWIS, dated *Penang*, 12th Sept. 1838, forwarding a piece of the metal of which the bell at *Malacca* is composed, and stated, from what he had learnt from the artists, that the metal in question was supposed to contain a large portion of gold.

Drawings of the Siamese Emperor were presented by Mr. J. Low.

Three copper coins of *Ceylon* were presented by Mr. LAYARD.

Physical.

Read a letter from Mr. Secretary PRINSEP, forwarding a list of the ornithological specimens collected by Dr. HELFER during his sojourn in the Tenasserim Provinces.

A letter from Capt. G. T. GRAHAM, offering to take charge of such specimens of natural history as the Society may desire to send to his Highness the Pasha of Egypt.

Resolved,—That the thanks of the Society be presented to Capt. GRAHAM for his kind offer, and that he be informed that the Society has nothing at present worthy of being presented to his Highness the Pasha.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of October, 1838.

Forenoon, 10 A. M.

Afternoon 4 P. M.

| Day of the Month. | Atmospheric Pressure. | | Temperature. | | | Hygrometry. | | | Aqueous tension. | | Weather. | | Atmospheric Pressure. | | | Temperature. | | Hygrometry. | | | Aqueous tension. | | Weather. | | | Aspect of sky. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | Old Stand. | Height at 32° Fah. | River water. | Well water. | Of air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hair Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | Wet-bulb. | Differential. | Therm. | By Hygrometer. | By Dew-point. | By Bulb. | By Hygrometer. | Old Stand. | Height at 32° Fah. | Barometer. | Atmospheric Pressure. | Of Air. | Dew-point. | 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I.—*An examination of the Páli Buddhistical Annals, No. 4. By the Hon'ble GEORGE TURNOUR, Esq. Ceylon Civil Service.*

AN ANALYSIS OF THE DIPAWANSO.

The design of my last article was to prove, that the chronological authenticity of the Buddhistical records was intentionally deranged or destroyed at the period of SÁKYA's advent. In entering now upon the examination of that portion of the Páli annals, which professes to contain the genealogy of the royal dynasties of India, from the last regeneration of the world to the manifestation of GÓTAMO I have to adduce in my own case another instance, to be added to the many already on record, of the erroneous and exaggerated estimates, into which orientalists may be betrayed in their researches, when they rely on the information furnished by Indian pandits, without personally analyzing the authorities, from which that information is alleged to be obtained. I should, however, be doing the Buddhist priesthood of the present day in *Ceylon* very great injustice, if I did not at the same time avow, that the too favorable expectations in which I have indulged, as to the continuity, after having fully convinced myself of the chronological extravagancies, of the Páli genealogical annals anterior to the sixth century before the birth of CHRIST, have in no degree been produced by wilful misrepresentations on their part. It has been already noticed* by me elsewhere, that the study of the Páli language is confined, among the natives of *Ceylon*, almost entirely to the most learned among the priesthood, and is prosecuted solely for the purpose of acquiring a higher order of qualification, for their sacerdotal functions, than those priests possess, who can consult only the vernacular versions of their

* Introduction to the *Mahāvamsa*.

scriptures. Their attention, therefore, is principally devoted to the examination of the doctrinal and religious questions contained in their sacred books; and that study is moreover conducted in a spirit of implicit faith and religious reverence, which effectually excludes searching scrutiny, and is almost equally unfavorable to impartial criticism. The tone of confidence with which my native coadjutors sought in the *Piṭakattayan* for the several 'resolves' or 'predictions' of BUDDHO which are alluded to in a former paper*, and the frankness of the surprise they evinced, when they found that none of those 'resolves' were contained in the *Piṭakattayan*, and only some of them in the *Aṭṭhakathā*, preclude the possibility of my entertaining any suspicion of wilful deception being practised. Confiding in their account of the historical merits of BUDDHAGHŌSO's commentaries, which appeared to me to be corroborated by the frequency of the reference made in the *Tikā* of the *Mahāwanso* to those *Aṭṭhakathā*, for details not afforded in the *Tikā*, I had impressed myself with the persuasion, that the *Aṭṭhakathā* thus referred to were BUDDHAGHŌS's Páli commentaries. Great, as may be readily imagined, was our mutual disappointment, when after a diligent search, persevered in by the priests, with a zeal proportioned to the interest they took in the inquiry, we were compelled to admit the conviction that BUDDHAGHŌSO in translating the Sīhala (Singhalese) *Aṭṭhakathā* into Páli, did not preserve the Indian genealogies in a connected and continuous form. He is found to have extracted only such detached parts of them, as were useful for the illustration of those passages of the *Piṭakattayan*, on which, in the course of his compilation, he might be commenting. He himself says in his *Aṭṭhakathā* on the *Dighanikāyo*†, "for the purpose of illustrating this commentary, availing myself of the *Aṭṭhakathā*, which was in the first instance authenticated by the five hundred *Arahantā* at the FIRST CONVOCATION, as well as subsequently at the succeeding CONVOCATIONS, and which were thereafter brought (from *Mdgadha*) to *Sīhala* by the sanctified MAHINDO, and for the benefit of the inhabitants of *Sīhala* were transposed into the *Sīhala* language, from thence I translated the *Sīhala* version into the delightful (classical) language, according to the rules of that (the Páli) language, which is free from all imperfections; omitting only the frequent repetition of the same explanations, but at the same time, WITHOUT REJECTING THE TENETS OF THE THEROS RESIDENT AT THE MAHÁWIHÁRO (at Anuradhapura), who were like unto luminaries to the generation of

* Journal for September, 1837.

† Vide Journal of July, 1837.

thers and the most accomplished discriminators (of the true doctrines)." All, therefore, of these genealogies, excluded from his *Aṭṭhakathā*, which are now found only in the *Tika* of the *Mahāwanso*, or in the *Dipawanso*, as well as much more perhaps, illustrative of the ancient history of India, which the compilers of these two Ceylonese historical works did not consider worth preserving, BUDDHAGHŌSO must have rejected from his commentaries, to which he gave almost exclusively the character of a religious work.

My Buddhist coadjutors are consequently now reluctantly brought to admit, that the *Mahāwanso*, with its *Tika*, and *Dipawanso* are the only Pāli records extant in *Ceylon*, which profess to contain the Indian genealogies from the creation to the advent of SĀKYA; and that even those records do not furnish the genealogies in a continuous form. And, now that my mind is divested of the bias which had been created by their previous representations, and which led me to attach great importance to the historical portions of BUDDHAGHŌSO's *Aṭṭhakathā* I cannot but take blame to myself for having even for a time allowed that impression to be made on me. The author of the *Mahāwanso**, in his *Tika*, declares more than once that he compiles his work from the *Sihala Mahāwanso* and *Aṭṭhakathā* of the *Mahāwihāro*, and from the *Sihala Aṭṭhakathā* of the *Uttarawihāro* fraternities, as well as from the *Mahāwanso* of the *Uttarawihāro* priests. The last mentioned of these works alone, as far as I am able to form an opinion at present, was composed in the Pāli language, at the time MAHĀNĀMO compiled his *Mahāwanso*. I am induced to entertain this opinion from the circumstance, that MAHĀNĀMO's quotations from that work alone are in the metrical form, whereas all the translated quotations made by Pāli authors from *Sihala* authorities are invariably, as might have been expected, rendered in prose. One of these quotations consists of the identical two verses with which the *Dipawanso* opens, and at the close of the *Tika* a reference is made to the *Dipawanso* for explanation of the violation of the *Mahāwihāro* consecration, in the reign of MAHASENO. For these reasons, and as that work bears also the title of the "*Mahāwanso*" or "the great genealogy," my Buddhist coadjutors concur with me in thinking, that the *Dipawanso* now extant is the Pāli *Mahāwanso* of the *Uttarawihāro* fraternity. In fact the titles of *Dipa* and *Mahā*, are indiscriminately given to both these histories. To prevent, however, their being confounded with each other, I shall continue to reserve the title of *Mahā* for MAHĀNĀMO's work, and that

* Pages xxxi. xxxii. xlii. xliii. of the Introduction to the *Mahāwanso*.

of *Dīpa* for the prior compilation, the author of which has not yet been ascertained.

It has been shown in the introduction to the *Mahāwanso*, that its author MAHĀNĀMO compiled his history in the reign of his nephew DHĀTASĪNO the monarch of Ceylon who reigned between A. D. 459 and 477, from the materials above described, a part of which was the version of the *Aṭṭhakathā* brought by MAHINDO from India in 307 before Christ, and translated by him into the *Sthala* language. This fact, coupled with many other circumstances inadvertently disclosed in the histories of the CONVOCATIONS, go far to prove that the *Piṭakatayan* and *Aṭṭhakathā* were actually reduced to writing from the commencement of the Buddhistical era, and that the concealment of their record till the reign of the Ceylonese ruler WATTAGAMINI, between B. C. 104 and 76, was a part of the *esoteric* scheme of that creed, had recourse to in order to keep up the imposture as to the priesthood being endowed with the gift of inspiration. The cessation of the concealment of these scriptures at that particular period, though attributed to the subsidence of the spirit of inspiration, in all probability, proceeded from the public disorders* consequent upon the Chōliā invasion, which led to the expulsion of that king and the priesthood from *Anurādhapura* by a foreign enemy, and to their fugitive existence in the wilderness of the island during a period of nearly 15 years.

The *Dīpawanso* from its being quoted by the author of the *Mahāwanso*, is unquestionably a prior work ; but as its narrative extends to the reign of MAHĀSENSO in A. D. 302, its priority cannot exceed 150 years. In the Journal of December last, I have mentioned the circumstances under which I obtained possession of a Páli copy of the *Dīpawanso*, in a very imperfect state, written in the Burmese character. As this work and the *Mahāwanso*, with its *Tikā*, are the best Páli records I possess of the Indian genealogies, I shall proceed to make extracts from such parts of the *Dīpawanso* as may throw light on this subject ; adding a note in those cases, in which the *Tikā* is either fuller than, or at variance from, the *Dīpawanso*. I shall not attempt to tabularize these dynasties, as the lists of kings is avowedly and manifestly incomplete, and as no continuous chronological results could be safely deduced from any table formed from such mystified data. It will be observed that the names of even the three rājas, during whose reigns the three Buddhā who preceded GO'TAMO were manifested in this *kappa*, are omitted in these lists. And yet there are detached notices of those kings, as well as of other Indian rājas, both in the text and commentaries of the Buddhistical scriptures, which are in themselves well

* Vide *Mahāwanso*, Chap. 33.

worthy of consideration, and to which I shall advert in future contributions.

The author of the *Dīpawanso* has certainly spared no pains in his endeavours to make the links of the *Thérāparamparā* chain complete, and consistent with chronology. He, however, only gives the succession of preceptors, who were the guardians of the *Winéyo* section of the *Piṣakattayan*, commencing with UPÁLI, whose death is placed in the sixth year of the reign of UDAYO; while the incongruities I have dwelt upon in the paper No. 2, have reference to SABHAKÁMI, who though a cotemporary disciple of BUDDHO, has been represented to have presided at the SECOND CONVOCATION, a century after SÁKYA's death; when he must, from the date of his *upasampadā* ordination, have been at least 140 years old. But even this succession of the *Winéyan* line of preceptors, the chronological particulars of which are pretended to be given with so much precision in the following extracts, will not stand the test of scrutiny by a person conversant with the rules that govern the Buddhistical church. It is an inviolable law of that code, established by BUDDHO himself at an early period of his mission, and adhered to to this day—to which rule there are only two well known exceptions—that no person, whether a noviciate priest called *Sāmanéro*, or an ascetic layman, however learned or pious he may be, can be ordained an *upasampadā* before he has completed his twentieth year. The two exceptions alluded to are the instances of SUMANO and SOPÁKO who were ordained *upasampadā* at seven years of age.

It will be seen that this line of preceptors, extending from the date of BUDDHO's death to the THIRD CONVOCATION, a term of 236 years, is made to consist of five successions. UPÁLI the cotemporary of BUDDHO, is stated to have been 60 years old in the eighth year of the reign of AJÁTASATTU, which is the 16th year A. B. He is represented to have survived BUDDHO thirty years, and to have died in the 6th of UDAYO's reign in A. B. 30. It is not however, mentioned how many years he had been an *upasampadā*, and all these dates work out therefore without disclosing any discrepancy.

DÁSAKO is represented to be his pupil and immediate successor, and he is stated to be 45 years old in the 10th of NAGASOKO's reign, which falls to A. B. 58. He was born, therefore, A. B. 13, and his preceptor UPÁLI died A. B. 30. Supposing his ordination had been put off to the last year of UPÁLI's life, he could not have been more than 17, when made an *upasampadā*. So far from being qualified to be the *custos* of the *Winéyo*, he wanted three years of the age to make him admissable for ordination. But we are further told, that

he died at the age of 64 in the eighth of SUSUMĀGO's reign, which falls to A. B. 80: having then been an *upasampadā* 50 years, he must necessarily have been ordained at 14 years of age. But there is manifestly some trifling error somewhere; for, by the latter dates he must have been born not A. B. 13, but A. B. 16.

So'NAKO was DĀSAKO's successor: he was 40 in the 10th year of KĀLĀSOKO's reign, which was A. B. 100; he was born therefore in 60, and he is stated to have died at the age of 66 in the sixth of the reign of the NANDOS, which falls to A. B. 124. He was therefore only 20 years old when his preceptor died: but it is specifically stated that he had been a learned *upasampadā* 44 years when he died; and consequently So'NAKO also could only have been 16 years when ordained.

SIGGAWO and CHANDAWO or CHANDAWAJJI were the co-disciples and successors of So'NAKO. SIGGAWO was 64 years old in the second of CHANDAGUTTO's* reign A. B. 164, and he died aged 76 in the 14th of that reign A. B. 176. He was born therefore A. B. 100, and yet we are told, that it was in this very year, the 10th of the reign of KĀLĀSOKO, they were ordained *upasampadā*, by So'NAKO. There is a manifest error, therefore, in the term of five years assigned for SIGGAWO's *upasampadā*ship. As his ordaining preceptor So'NAKO died A. B. 124, he must have been at that time only 24 years old, and at his own death an *upasampadā* of 76 years' standing,—a term co-equal with his natural life. In various parts of the *Atthakāṇḍa*, and in the fifth chapter of the *Mahāwanso* likewise it is stated that they were "adult priests" at the time the SECOND CONVOCATION was held; and indeed it is specifically stated in page 30, that SIGGAWO was 18 years old when he was first presented to So'NAKO. The pretended prophecy, delivered to him and CHANDAWAJJI at the close of that CONVOCATION, would consequently be nullified at once, if their birth be not dated anterior to A. B. 100: manifestly, therefore, these dates also are an imposition.

Lastly, MOGGALIPUTTATISSO was their disciple; he was ordained in the second of CHANDAGUTTO A. B. 164, and he was 66 in the sixth of DHAMMAŚOKO A. B. 220; he was born, therefore, in A. B. 154, and could only have been 14 years old at the death of SIGGAWO, when he became the chief of the *Winēyo* preceptors. He is stated to have died in the 26th of DHAMMAŚOKO, A. B. 240, aged 80. This gives A. B. 160 instead of A. B. 154 for his birth, being a discrepancy of six years.

* I assign in these remarks 24 years to the reign of CHANDAGUTTO, which will bring ASOKO's accession to A. B. 214, and his inauguration, four years afterwards, to A. B. 218.

On pointing out to my pandits, that, even in this elaborate adjustment of the succession of preceptors, the number of lives given is found to be insufficient to fill up a term of 236 years, without bringing the several preceptors into office before they had attained the prescribed age, they at once decided, that the author of the *Dipawanso* has put forth an erroneous statement, and that the whole ought to be rejected as unfounded. How the discrepancies are to be rectified they do not suggest, beyond hazarding a conjecture, that each preceptor, like *SABHAKĀMI*, must have lived to a more advanced age; and that each succeeding preceptor consequently had attained a maturer standing at the period of his succession.

It is time, however, that I should proceed to extracts from the *Dipawanso*.

The Third Bhānawāro of the Dipawanso.

"Omitting the rājas who existed in former *kappā*, I will in the fullest manner narrate (the history of) the rājas of the present creation. I shall perspicuously set forth the regions in which they existed, their name and lineage, the term of their existence, and the manner in which they governed: whatever that narrative may be, attend ye thereto.

"The first individual who was inaugurated a rāja, the protector of the land, was named *MARĀ'SAMMATO*; he was superlatively endowed with personal beauty; that *Khattiyo* exercised the functions of sovereignty.

"*RO'JO* was his son, *WARARO'JO*, the monarch *KALYA'NO*; *WARAKALYA'NO*, *UPO'SATHO*, *MANDA'TO** the seventh in succession, a supreme ruler of the four *dipā*†, endowed with great wealth; *CHARO*, the rāja *UPACHARO*, and *CHE'TIYO* abounding in riches; *MUCHALO*; *MAHA'MUCHALO*, *MUCHALINDO*, *SA'GARO*; *SA'GARADE'WO*, *BHA'RATO*, *BHA'GI'RATHO* the *Khattiyo*; *RUCHI'*, *MAHA'RUCHI*, *PATA'PO*, *MAHA'PATA'PO*, *PANADO*, *MAHA'PANA'DO*, the *Khattiyo* *SUDASSANO*, *MAHA'SUDASSANO*, and in like manner two of the name of *NE'RU*; and *ACHCHIMA'†*, (were successively the sons of each preceding ruler.) The term of existence of these twenty-eight rājas was an *Asankhēyyān*; and the capitals in which these monarchs, whose existence extended to an *Asankhēyyān*, reigned, were *Kusāwaddi*, *Rājagahan* and *Methilā*."

(Here follows the rule by which an *Asankhēyyān* is to be computed.)

"The descendants of *ACHCHIMA'* were one hundred; and they ruled supreme in their capital called *Sakulā*§. The last of these was the *Khattiyo* *ARINDAMO*;

* In the *Mahāwanso*, I have been misled by the plural *Mandātā*, and reckoned two kings of that name. I see by the *Tikā* the name should be in the singular *Mandāto*. The twenty-eight rājas who lived for an *Asankhēyyān* include therefore *MAHA'SAMMATO*.

† *Jambudīpa*, *Uttarakuru*, *Aparagōyānan* and *Pubbaviddhā*.

‡ This name also has been erroneously omitted by me in the *Mahāwanso*. *Achchimā* was there read *Pachchima*. The *Tikā*, however, shows that the *Dipawanso* is correct.

§ In the *Tikā*, it is further stated: "The eldest son of *ACHCHIMA'* was the monarch *WATTAPA'RA'SA'NI*, though his name be not preserved, quitting *Mithilā* in the same manner that the *Ośākha* family quitting *Bārdasi* founded *Kapilavastu* in a

his descendants, fifty-six monarchs in number, reigned supreme in their capital *Ayijhapurā*.

"The last of these was DUFFASAHO, a wealthy monarch: his descendants were sixty rulers, who reigned supreme in their capital *Bardasā*.

"The last of these was AJITAJANO; his descendants eighty-four thousand in number ruled supreme in their capital *Kapilanagarā*.

"The last of these was BRAHMADATTO, greatly endowed with riches; his descendants were thirty-six rājas in number, who reigned supreme in their capital *Haithipura*.

"The last of these was the rāja KAMBALAWASABHO; his descendants were thirty-two monarchs, who reigned supreme in their capital *Ekachakkha*.

"The last of these was the illustrious PURINDA'WO; his descendants were twenty-eight monarchs, who reigned supreme in their capital *Wajirapura*.

"The last of these was the rāja SÔDHANO; his descendants were twenty monarchs and they reigned supreme in their capital *Madhurā*.

"The last of these was the rāja DHAMMAGUTTO, powerful in his armies; his descendants were eighteen monarchs, who reigned supreme in their capital *Aritthapura*.

"The last of these was the rāja NARINDASITTHI¹; his descendants were seventeen kings, who reigned supreme in their capital *Indapattapura*.

"The last of these was BRAHMEDE'WO² rāja; his descendants were sixteen monarchs, who reigned in their capital *Ekachakkhu*.

"The last of these was the monarch BALADATTO³; his descendants were fourteen rulers, who reigned supreme in their capital *Kôsambinagarā*.

"The last of these was celebrated under the title of BHADDADE'WO⁴; his descendants were nine kings, who reigned in their capital *Kannakochchhanagarā*.

"The last of these was the celebrated NARADEWO; his descendants were seven monarchs, who reigned supreme in their capital *Rājānanagarā*.

"The last of these was the rāja MAHINDO; his descendants were twelve kings, who reigned supreme in their capital *Champākanagarā*.

"The last of these was the monarch NA'GADE'WO; his descendants were twenty-five rulers, who reigned supreme in their celebrated capital *Mithila*.

"The last of these was BUDDHADATTO⁵, a rāja powerful by his armies, his descendants were twenty-five monarchs, who reigned supreme in their capital *Rājagahan*.

"The last of these was DIPANKARO; his descendants were twelve rājas, who reigned supreme in their capital *Takkasilā*.

"The last of these was the rāja TALISAKARO, his descendants were twelve rulers, who reigned supreme in their capital *Kusindra*.

"The last of these was the rāja PURINDO; his descendants were nine kings, who reigned supreme in *Tēmaññi*.

"The last of these was the worthy monarch SA'GARADE'WO, whose son MAKHA'DE'WO† was pre-eminent for his deeds of charity; his descendants were eighty-four thousand monarchs, who reigned supreme at *Mithilā*.

subsequent age, established himself at *Kasāwattī*, raised the *Chhata* there, and there his dynasty flourished. His lineal successors in that empire were in number ninety-nine, the last of whom was ARINDAM, and they all ruled there under the designation of the *Achchimā* dynasty." I should infer from this passage that the capital called *Sakula* in the *Dipawanso* should be *Kusāwattī*.

* In the *Tikā* there are the following variations of appellation from the *Dipawanso*: 1. *Brahmasūwo*. 2. *Brahmadatto*. 3. *Baladēwo*. 4. *Haithidēwo*. 5. *Samud-dhadatto*.

† The *Tikā* observes in reference to the *Mahāwanso*, that according to the

"The last of these was NE'MI, a monarch who received offerings from the *Déwá* and was a *Chakrawatti* (powerful sovereign), whose dominions were bounded by the ocean: the son of NE'MI was KALA'KAJANAKO^{*}; his son was SAMANKURO: and his son was Aśo'ko; and his descendants were eighty-four thousand rulers who reigned supreme in their capital *Báránasi*.

"The last of these was the rāja WIJAYO, a wealthy monarch: his son was WIJITASENO who was endowed with great personal splendor. DHAMMASE'NO, NA'GASE'NO, SAMATHO, DISANPATI, RAINU, KUSO; MAHA'KUSO, NAWARATHO, DASARATHO, RA'NO, BILA'RATHO, CHITTADASSI, ATTHADASSI, SUJA'TO, OKKA'KO†, OKKA'KAMUKHO', NIPURO, CHANDIMA', CHANDAMUKHO, SIRIRA JA, SANJAYO, the monarch WESSANTARO, JALO, SIHAWA'NANO and SIHASSARO. These were enterprising monarchs, who upheld the pre-eminence of their dynasty; and his (SIHASSARO's) descendants were eighty-two thousand, who (all) reigned supreme in their capital *Kapilawatthu*.

"The last of these was JAYASE'NO; his son was SE'HAHANU who was endowed with great personal splendor. Unto the said SE'HAHANU there were five sons. Those five brothers were SUDDHO'DANO, DH'OTO'DANO, SUKKO'DANO, GHATITODANO and AMITODANO. All these rājas were distinguished as ODANO‡. SIDDATTHO, the saviour of the world, was the son of SUDDHO'DANO; and after the birth of his illustrious son RAHULO, finally relinquished (worldly grandeur) for the purpose of attaining Buddhohood.

"The whole of these monarchs, who were of great wealth and power, were in number one lakh, four *nakutani*s and three hundred. Such is the number of monarchs of the dynasty from which the *Bódhisatto* (Buddho elect) is sprung.

"Perishable things are most assuredly transitory, it being their predestiny that after being produced they should perish; they, accordingly, being produced, pass away. To arrest this (eternity of regeneration and destruction, by the attainment of *nibbāna*) is indeed to be blessed."

The conclusion of the Mahārdjawanso.

"The rāja SUDDHO'DANO, the son of SE'HAHANU was a monarch who reigned in the city called *Kapila*; and the rāja BHA'TIYO was then the monarch who reigned at *Rājagahā*, a city situated in the centre of five¶ mountains. These two rulers of men, SUDDHO'DANO and BHA'TIYO, the descendants (of royal dynasties) from the commencement of the *kappó*, were intimately attached to each other.

"(By BIMBISA'RO the son of BHA'TIYO) these five wishes were conceived in the eighth year of his age. 'Should my royal parent invest me with sovereignty:

Atthakathā MAKHA'DEWO is reckoned among the eighty-five thousand successors of *Sagaradevo*, whereas that number should be exclusive of him.

* Here also the *Tikā* notices in reference to the *Mahāwanso* that the eighty-five thousand are to be reckoned exclusive of SAMANKURO and AśOKO.

† Vide *Mahāwanso* Introduction, p. xxxv. for the establishment of the *Sakyan* dynasty of *Okkākamukho*.

‡ This word literally signifies "boiled rice:" no reason is assigned for adopting the designation.

§ In this sense a *nakuta* is 10,000, making therefore 140,300 monarchs. According to the *Tikā* there were 252,539 rājas from MAHA'SAMMATO to OKKAKO, the *Iksvaku* of the Hindus.

¶ This is a passage of the *Pitakattāyā* as propounded by SA'KYA.

¶ The names of these mountains are *Isigili*, *Wibhāro*, in which is situated the *Sattapanni* cave in which the first convocation was held; *Wéputto*; *Pandawo* and *Gejjhakato*, the mountain where BUDDHO dwelt last in the neighbourhood of *Rājagahā*.

should a supreme of men (Buddho) be born in my dominions : should a TATHA'GATO select me for the first person to whom he presented himself : should he administer to me the heavenly *dhammo* ; and should I comprehend that supreme *dhammo*—these will be blessings vouchsafed to me.' Such were the five wishes conceived by BIMBISA'RO.

"Accordingly, on the demise of his father, he was inaugurated in the fifteenth year of his age : within his dominions the supreme of the world was born : TATHA'GATO repaired to him as the first person to whom he presented himself : propounded the heavenly *dhammo* : and the monarch comprehended it.

"MAHA'WE'RO was not less than thirty-five years old, and the monarch BIMBISA'RO, was in the thirtieth year of his age. GO'TAMO therefore was five years senior to BIMBISA'RO. That monarch reigned fifty-two years, thirty-seven of which he passed contemporaneously with Buddho.

"AJA'TASATTU (his son) reigned thirty-two years : in the eighth year of his inauguration, the supreme Buddho attained *nibbāna*. From the time that the omniscient Buddho, the most revered of the world and the supreme of men attained Buddhohood, this monarch reigned twenty-four years."

The conclusion of the third Bhūnawāro.

NOTE.—A *Bhūnawāro* ought to contain 250 gāthā. This section is only equal to 87, and some of the verses are incomplete. I can however detect no want of continuity in the narrative.

The fourth *Bhūnawāro* commences with an account of the first convocation, which is already described in No. 1, of this analysis. This chapter then proceeds with a chronological narrative of the history of India, specifying also the contemporaneous dates of the reigns of the monarchs of *Ceylon*, and of the death of those inspired *Thérā*, who are considered to have constituted the connecting links of the chain called the *Thérápāramparā* or generation of preceptors.

The following are the most important passages of this section :

"The sixteenth year after the *nibbāna* of the saviour of the world was the twenty-fourth of AJA'TASATTU, and the sixteenth of WIJAYO (the *rājā* of *Langk*). The learned UPA'LI was then sixty years old. DA'SAKO entered into the *upasampadā* order in the fraternity of UPA'LI. Whatever may be the extent of the doctrines of the most revered Buddho which had been promulgated by that vanquisher as the nine integral portions of his dispensation, the whole thereof UPA'LI taught. The said UPA'LI thus taught the same, having learnt, in the most perfect manner, the whole of the nine portions of his doctrine, which have been auricularly perpetuated, from BUDDHO himself. BUDDHO has declared of UPA'LI in the midst of the congregated priesthood, 'UPA'LI being the first in the knowledge of *winēyo*, is the chief in my religion.' He who had thus been selected and approved in the midst of the assembled priesthood, and who had a numerous fraternity, taught the three *Pūṣa* to a fraternity of a thousand bikkhus, of whom DA'SAKO was the chief disciple : he taught them (especially) to DA'SAKO and to five hundred *Thérā*, who had overcome the dominion of sin, were of immaculate purity and morals, and versed in the *vēda* (history of the schisms). The *thero* UPA'LI who had a great fraternity continued to teach the *winēyo* for full thirty years after the *nibbāna* of the supreme BUDDHO. The said UPA'LI taught the whole of the eighty-four thousand component parts of the doctrines of the divine teacher to the learned DA'SAKO.

"DA'SAKO having learned the whole of the *Pitako* in the fraternity of UPA'LI, and held the office of *Upajjāyā* (conferer of the sacerdotal ordination of *upasampadā*) propounded the same. The chief of the great fraternity (UPA'LI) having deposited (*apeśwena*) the whole *winceyo* in the charge of the learned DA'SAKO, died. The monarch UDAYO reigned sixteen years. It was in the sixth year of his reign that the thero UPA'LI demised.

"A certain trader named SO'NAKO who had come from the *Kāśi* country, and was proud of his high descent, entered the sacerdotal order in the religion of the divine teacher (BUDDHO) at the *Wēluwano** *wihāro* in the mountain-girt city (*Rājagahan*). DA'SAKO, the chief of the confraternity, sojourned in the mountain-girt city, the capital of the *Magadha* nation, thirty-seven years, and initiated SÓNAKO into the sacerdotal order. The learned DA'SAKO was forty-five years old, in the tenth year of the reign of the rāja NA'GADA'SO, and twentieth of the reign of the rāja PANDU (of *Lankā*).

"The thero SO'NAKO became an *upasampadā* in the fraternity of the thero DA'SAKO and the thero DA'SAKO taught SO'NAKO the nine component parts of the faith; and having learned the same from the preceptor who ordained him, he also taught the same. The thero DA'SAKO having invested SÓNAKO thero, who was the senior *papī* in his fraternity, with the office of chief over the *winceyo*, died in the sixty-fourth year of his age.

"At the expiration of ten years and half a month of the reign of the rāja KA'LA'SOKO, the thero named SÓNAKO was forty years old, and he had then been a thero learned in the doctrines for fourteen years; and at the period of the expiration of ten years and six months, the thero SÓNAKO, who was the chief of a great fraternity, conferred the *upasampadā* ordination on SIGGAWO and CHANDAWO.

"At that period a century had expired from the time that BHAGAWA' had attained *nibbāna*, and certain (*bikkhus*) of *Wesāli* native of *Wajji* set forth these ten (new) tenets of discipline."

Here follows an account of the schism, and of the SECOND CONVOCATION held in consequence, in the tenth year of the reign of KĀLĀSOKO, with which the fourth *Bhānawāro* concludes, the particulars of which are given in the paper, No. 2, and in the *Mahāwanso*. The fifth commences with recapitulating the principal particulars of the FIRST and SECOND CONVOCATIONS and the schisms, and then proceeds:

"In the second year of the reign of CHUNDAGUTTO, when SIGGAWO was sixty-four years old, which was the fifty-eighth year of the reign of PANDUKA'BHAYO, the rāja (of *Lankā*) MOGGALIPUTTO was ordained an *upasampadā* in the fraternity of SIGGAWO; and the said MOGGALIPUTTATISSO, having acquired the knowledge of the *winceyo* in the fraternity of CHANDAWAJJI, was released from the sins inescapable from liability to future regeneration. Both SIGGAWO and CHANDAWAJJI taught the whole of the *Pitako*, which embraces both (the *winceyo*, discipline, and *dhammo*, doctrine), to the pre-eminently endowed MOGGALIPUTTO. SIGGAWO of profound wisdom died at the age of seventy-six, having constituted the pre-eminently endowed MOGGALIPUTTO the chief of the *winceyo*. CHANDAGUTTO reigned twenty-four years. In the fourteenth year of his reign SIGGAWO died.

"In the sixth year of the reign of DHAMMA'SOKO, MOGGALIPUTTO was sixty-six years old. MAHINDO was then ordained an *upasampadā* in his fraternity, and acquired a knowledge of the *Pitako*.

"UPA'LI attained his seventy-fourth, DA'SAKO his sixty-fourth, the thero SO'NAKO

* This word signifies the bamboo grove.

his sixty-sixth, SIGGAWO his seventy-sixth, and MOGGALIPUTTO his eightieth year. The following are the periods that all of these theros were *upasampaddā*, of whom at all times the learned UPA'LI was recognized as the first chief, viz. ; DA'SAKO was an *upasampaddā* fifty, SÓNAKO, forty-four, SIGGAWO five*, and MOGGALIPUTTO, sixty-eight years.

"UDAYO reigned sixteen years, and in the sixth year of UDAYO's reign, UPA'LI died.

"SUSANA'GO, the opulent monarch, reigned ten years, in the eighth year of SUSANA'GO's reign, DA'SAKO died.

"At the demise of SUSANA'GO he had ten brothers, who collectively reigned twenty-two years, in great celebrity. In the sixth year of their reign SÓNAKO died.

"CHANDAGUTTO reigned twenty-four years, and in the fourteenth year of his reign SIGGAWO died.

"The celebrated DHAMMA'sÓKO the son of BINDASA'RO reigned thirty-seven years. In the twenty-sixth year of his reign, MOGGALIPUTTO died, having caused religion to be glorified, and having completed the full measure of human existence.

"The learned UPA'LI, the chief of a great fraternity died at the age of seventy-four, having appointed his learned disciple DA'SAKO to the office of chief *wineyo*.

"DA'SAKO, died at the age of sixty-four, having appointed his senior learned disciple SO'NAKO to the office of chief of the *wineyo*.

"SO'NAKO, who was endowed with the six *abinnā*, died at the age of sixty-six, having appointed his *arahaṭ* son (disciple) SIGGAWO to the office of chief of *wineyo*.

"SIGGAWO who was endowed with the six *abinnā*, died at the age of seventy-six, having appointed his son (disciple) MOGGALIPUTTO to the office of chief of *wineyo*.

"MOGGALIPUTTATISSO died at the age of eighty, having appointed his disciple MAHINDO to the office of chief of *wineyo*.

The conclusion of the fifth Bhānawāro.

"PIYADASSANO‡ was inaugurated in the two hundred and eighteenth year after the death of the supreme BUDDHO. At the installation of PIYADASSANO preternatural manifestations took place."

(For these manifestations I must refer to the *Mahāwanso*.)

"That royal youth, who was the grandson of CHANDAGUTTO and the son of BINDUSA'RO was at that time the (*karamolino*) ruler of *Ujjeni*.

"In the course of an official circuit he visited *Wessanagarā*; where lived a damsel, the daughter of a *Sittihī*, who became celebrated under the name of DEWI. By his connection with her, an illustrious son was born. (The said son) MAHINDO and (his daughter) SANGAMITTA' formed the resolution to enter the order of priesthood. Both these individuals having been thus ordained, overcame subjection to regeneration. ASÓKO was then reigning in the illustrious *Pataliputta*. In the third year of his inauguration he became a convert to the religion of the supreme BUDDHO. (If it be asked) what the duration of the term is, from the date of the *parinibbāna* of the supreme BUDDHO to the date of the birth of MAHINDO, who was descended from the *Moriyan* dynasty, (the answer is) two hundred and five years. In that year MAHINDO the son of ASÓKO was born. In MAHINDO's tenth year, his father put his own brothers to death; and he past four years in reducing *Jambudīpa* to order. Having put to death his hundred brothers, and reduced the dynasty to one

* This is evidently a mistake.

† The reign of KA'LA'SOKO is omitted, who was the father of the *Nandos* who are here designated the brothers of SUSANA'GO.

‡ Having erroneously written this name "PIYADASINO" in a former paper, Vol. VI. p. 1056, you have been led to suppose it was the genitive case of *Piyadasi*.

(family), they (the people) inaugurated him in the fourteenth year of MAHINDO's age. ASÓKO, who was endowed with great personal superiority and good fortune, and was destined to rule the world, was inaugurated under miraculous manifestations. They installed PIYADANSANO on his completing his twentieth year*."

The account of the interview with *Nigrodho*, the expulsion of the brahman sects, and the construction of the wiháros is then given, to the close of the sixth *Bhánawáro*.

The seventh *Bhánawáro* begins with the account of MAHINDO and SANGAMITTÁ being admitted into the order of the priesthood, (the former was at once ordained *upasampadá*, being of the age of twenty; but the latter remained a *samanéri* for two years, being only eighteen,) in the sixth year of ASÓKO's inauguration. These particulars will be found in the *Maháwanso*.

"ASÓKADHAMMO was fifty-four years old at the time of his inauguration, and at the time of ASÓKADHAMMO being inaugurated, MOGGALIPUTTATISSO was sixty-six. MAHINDO entered into the order of priesthood in the fraternity of MOGGALIPUTTATISSO. MAHA'DE'WO performed the ceremony of admission, and MOJJHANTO, the ceremony of the *upasampadá* ordination. These were the three preceptors who qualified MAHINDO for the priesthood. The said preceptor MOGGALIPUTTATISSO taught MAHINDO, who illuminated (*Lanká*) *dīpo*, the whole of the *Pitako*, both as regards its import and its doctrine. In the tenth year of MAHINDO's (ordination) having acquired a perfect knowledge of the whole creed, he became the head of a fraternity, and (*pachariyo*) a subpreceptor (under MOGGALI). The said MAHINDO, having thus acquired a knowledge of the perfectly profound and well arranged (*Piṭakattayán*), containing the two doctrinal portions (the *winayo* and the *abhidhammó*) and the *suttako* (the parables) as well as the history of the schisms of the preceptors, became a perpetuator of the same. MOGGALIPUTTATISSO thus perfected MAHINDO the son of ASÓKO, in the knowledge of the three *wejja* and the four *patisambhidá*, and (thereby) MOGGALIPUTTATISSO permanently established in his disciple MAHINDO, the whole of the *Piṭakattayán* which had been thus handed down to him.

"NIGRÓDHO was admitted into the priesthood in the third year of ASÓKO's reign, his brother (Tisso) in the fourth, and in the sixth his son MAHINDO. Tisso and SUMITTAKO, the two theros who were descended from the *Kuntí*, and were endowed with supernatural powers, died in the eighth year of the reign of ASÓKO. From these two princes having entered the order of priesthood, and from (the manner in which) these two theros died, multitudes of the *khattiya* and *brahman* castes proclaimed themselves to be devotees in this creed, and great benefits and honors resulted to the religion of the vanquisher; and the heretics, who had been influential schismatics, lost all their ascendancy. The *pándarangá*, the *jaṭṭá*, *niganthá*, *chétaká* and other sects for seven years continued, however, to perform the *upósatha* in separate fraternities. The sanctified, pious, and virtuous ministers (of BUDDHO) would not attend those *upósatha* meetings. At this conjuncture, it was the two hundred and thirty-sixth year (of the Buddhistical era)."

The *Dipawanso* then gives the account of the THIRD CONVOCATION and of the dispersion of the missionaries for the promulgation of Bud-

* This is evidently a clerical error, his son MAHINDO being then fourteen years old. It was subsequently mentioned that ASÓKODHAMMO was forty-five years old at his inauguration.

dhism through the adjacent kingdoms of Asia, viz. *Gandhāro*, *Mahise*, *Aparantako*, *Mahardātthān*, *Yōnō*, *Hiwawanto*, *Suwannabhūmi* and *Lankādīpo*.

The ninth *Bhīṇawāro* commences with the history of *Ceylon*, and it is singular that the origin of the *Sihāla* race is here divested of the fabulous character given to it in the *Mahāwanso* to the extent formerly suggested by me. If the popular legend of the lion (*siho*) had not been previously known, the account in the *Dīpawanso* would have been rendered, by any unprejudiced translator, into English without naming the fabulous monster, literally thus :

"This island *Laṅka* acquired the name of *Sihāla* from *Sihō**. Listen to this narrative of mine, being the account of the origin of this island and this dynasty. The daughter of a king of *Wango*, having formed a connection with a certain *Sihō*, who found his livelihood in a wilderness, gave birth to two children. These two children named *Si'haba'hu* and *Se'wali* were of prepossessing appearance. The mother was named *Susima'*, and the father was called *Siho*, and at the termination of sixteen years, secretly quitting that wilderness, he (*Si'haba'hu*) founded a city, to which capital he gave the name of *Sihapura*. In that *Lāla* kingdom, the son of *Si'ho* becoming a powerful monarch, reigned supreme in his capital *Sihapura*."

This *Bhāṇawāro* proceeds with the account of *Wijayo* landing in *Ceylon*, and the establishment of his dynasty, omitting however, entirely, *Wijayo's* marriage with *Kuwe'ni*, and narrates the reigns of the ensuing kings to *De'wānanpiyatisso*, assigning to them reigns of the same duration, as that given to them in the *Mahāwanso*. We then find the synchronisms in the chronologies of India and *Ceylon*, which are quoted in the introduction to the *Mahāwanso* from the *Aṭṭhakathā* in the *Wineyo*.

I do not notice any matter in the *Dīpawanso*, not found in the *Mahāwanso*, till I come to the eighteenth *Bhāṇawāro*. The *thēripa-ramparā*, or succession of preceptresses is there given, taken from the *Aṭṭhakathā* on the *Wineyo* in the following words :

"She who was renowned under the appellation of *Pajāpati*, and was of the *Gotamo* family, endowed with six *abhinna* and with supernatural gifts, the younger sister, born of the same mother, of *MAHA'MA'YA'* (the mother of *BUDDHO*) : and who, with the same affection as *MA'YA* herself nourished *BHAGAWA'* at her breast, was established in the highest office (among priestesses).

* "*Pachchantan*," I have translated, "foreign" in the *Mahāwanso*, as the word is "compounded of "*pati*" and "*antas*." It would be better rendered as "situated on the confines."

Wanawāsi is here omitted, probably by an error of transcription.

This passage is important *Mātacha Susimānāma, piṭācha Sihasekhayo*. If "*Sihō*" was intended for a "lion," "*Sachayo*" which signifies "named" or "called" would not be used.

"The following are the priestesses who (in succession) acquired a perfect knowledge of the *wineyo*, viz. : KHE'MA' UPPALAWANNA', two of each name, and PATA'-CHA'RI, DHAMMADINNA', SÓBRITA', ISIDA'SIKA', WISA'KHA', ASÓKA', SAPALA', SANGHADA'SI, gifted with wisdom, NANDA' and DHAMMAFA'LA', celebrated for her knowledge of *Wineyo*.

"The theri SANGHAMITTA', UTTARA', who was gifted with wisdom, HE'MAPA'SA, DASSALA', AGGAMITTA', DASIKA', PHEGGUPABBATA', MATTA', SALALA', DHAMMA-BA'SIYA—these juvenile priestesses came hither from *Jambudīpa*, and propounded the *Wineyapīṭako* in the capital designated *Anurādhapura*—they propounded not only the five divisions of the *wineyo*, but also the seven *Pakaranāsi*.

"The females who were ordained *upasampadā* by them in this island were SÓMA, devoted to *Dhammo*, GORIDI'PI', DHAMMADA'SIYI, DHAMMAFA'LA' versed in the *wineyo*, MAHILA conversant in the *dhūtanāḍḍā*, SÓ'BHANA, DHAMMATA, PASSANAGAMMA', also versed in the *wineyo*, and SA'TA KA'LI profound in the theri controversy, and UTTARA'.

"Under the instructions of A'BHAYO* celebrated for his illustrious descent, the aforesaid priestesses as well as SUMANA† renowned for the doctrinal knowledge among her sisterhood, a maintainer of the *Dhūtangā*, a vanquisher of the passions, of great purity of mind, devoted to *dhammo* and *wineyo*, and UTTARA' endowed with wisdom, together with their thirty thousand priestesses, were the first priestesses who propounded at *Anurādhapura*, the *wineyo*, the five *Nikāye* (of the *Suttapiṭako*) and the *Suttapakaraṇī* of the *Abhidhammo*.

"MAHA'LA equally illustrious for her knowledge of the *dhammo* and for her piety, was the daughter of the monarch KA'KAWANNO GIRIKA'LI, profoundly versed by rote, was the daughter of his *Poorōhito* (the almoner of KA'KAWANNO'); KA'LADA'SI and SABBAPA'PIKA' were the daughters of GUTTO. These priestesses, who always maintained the orthodox texts, and of perfect purity of mind, were versed in the *dhammo* and *wineyo*, and having returned from the *Rōhana* division maintained by the illustrious ruler of men ABHAYO‡, propounded the *Wineyo*, at *Anurādhapura*."

The remainder of this passage is so confused as not to admit of a continuous translation.

In the twentieth *Bhānawādro* is specified the reducing the scriptures to record, in precisely the same two verses as in the *Mahāwanso*; and in the twenty-second it is mentioned that WASABHO the rāja of *Ceylon* between A. D. 66 and 110, brought water into the town of *Anurādhapura* through a tunnel "*ummaggo*," and with this *Bhānawādro*, the *Dipawanso* terminates at the close of the reign of MAHA'SE'NO.

* ABHAYO, the brother of DE'WANANPIYATISSO.

† Vide Index of the *Mahāwanso* for this name.

‡ Vide Index for *Gāmini Abhaya*, the name of DUTTHAGA'MINI before he recovered the kingdom.

II.—*Report on the Copper mines of Kumaon. By Capt. H. DRUMMOND, 3rd, B. L. C.*

Many of our readers will be aware, that Capt. DRUMMOND of the 3rd Light Cavalry, brought with him to this country when he returned about two years ago from furlough, a practical miner from Cornwall, and that, upon his application, the sanction of Government was given to the employment of this person, under Capt. DRUMMOND's superintendence, in the examination of the capabilities of the mines of copper in *Kumaon*, with a view to the introduction eventually of a better method of working them. These mines were reported upon at length by Capt. HERBERT ten years ago, but as the observations of a practical workman upon their present condition, and upon the methods of extracting the ore which are in use, cannot be without interest, the Government has permitted the following report by Capt. DRUMMOND of his proceedings to be printed in these pages.

Mines of copper in the eastern districts of Kumaon.

Of the mines of copper situated in the eastern division of this province only two are now worked, one at *Rye* in the pergunnah of *Gungowly*, the other at *Sheera* in *Barrabeessy*, the rest, namely, *Belar*, *Shore*, *Goorung*, and *Chincacolee*, have all fallen in, and been abandoned, and are consequently inaccessible at the present moment.

The mines of *Rye* and of *Sheera* have been worked nearly to the extent available, that is to say, available so far as native mining (or rather burrowing) can accomplish; not that the resources of these mines are by any means exhausted, but only that part, which being near the surface, can be obtained without the aid of skill and capital.

From the length of time that these mines have been worked, the appearance of the ground about them could not be expected to be very different from the condition in which it was found, but their poor state at present is no argument, why they should not become very profitable when prosecuted to a greater depth.

In other countries it seldom happens, I believe, that mines of copper are found to be productive near the surface, and in Cornwall few of them ever yield a return till a considerable depth underneath is reached, as much as 30 or 40 fathoms. And the greater part of this distance consists generally of little else than the mere ferruginous substance, termed *gossan*, which covers the ore, whilst scarcely any of the latter can be discerned. By analogy therefore the same may be expected here, and this is so far confirmed by the native miners, as well as by the present and former lessees of the mines, who assert

that the quantity of ore increases considerably in the downward direction. In no instance have I yet learned of a mine having been given up on account of deficiency of copper ore: all concur in the belief that there is no want of ore, but a great want of the means for extracting it.

Rye mine—Pergunah of Gungowlee.

This mine is opened on the eastern side of a hill of moderate elevation. The rock formation is composed of dolomite and talc. The dolomite* occurs compact, slaty and crystalline, and might frequently be mistaken for common primary limestone, but its feeble effervescence in acids readily distinguishes it as a magnesian carbonate of lime. The talc occurs in beds, both indurated and slaty (the soapy killas of Cornwall); and it is in these beds that the ores of copper are found in numerous strings, having every appearance of being leaders, as they are called, to solid ore, and maintaining a distinct course, which I shall accordingly denominate lode, agreeably to the term used in mining. The strike, or direction, of the strata, is nearly W. N. W. and E. S. E. dipping at an angle of about 45° to the N. N. E.

The present entrance is by an adit or passage, which serves as a drain. The adit is driven on the course of one of these lodes, which continues west about 10 fathoms, when it falls in with another lode, that alters its direction to 15° , and afterwards to 30° north, inclining nearly 50° to the east of north. At the time I penetrated to the working part of the mine, it was then about 58 fathoms from the entrance. The lode had been taken away from underneath, as deep as the miners could manage to excavate, and its place filled up with rubbish. Above also they had taken it away as high as it was found to be productive; and, when I saw them at work, they were then extending their operations in the same westerly direction, the lode being about two feet wide, and containing good yellow copper ore, but with a large proportion of its talcous matrix, 20 per cent. only being metalliferous.

The passage varies from two to four feet in height, and from two to two and a half in width; the superincumbent hard dolomitic rock not allowing the labourers to make it higher, without having recourse to blasting, with which they are totally unacquainted. A short distance above the entrance is an old adit, which has been carried on the course of the same lode, and is now kept open for the purpose of ventilation.

* Dolomite is not a rock producing copper in England, but it is known in other countries to contain ores of this metal and of iron. The rich mines of Cuba are said to be in it.

The yellow sulphuret of copper, or copper pyrites, in its perfectly pure state yields about 80 per cent. of metallic copper; and though not a rich ore, is the most important of any from its abundance, and from being generally more to be depended on for continuance than the richer varieties*. In England, more copper is obtained from it than from all the other ores together; and, should this mine be prosecuted to a greater depth, I have no doubt, that the strings of ore above mentioned, will be found to lead eventually to solid ore, when data as to the actual capabilities of the mine may with certainty be obtained.

In the event of an experimental mine being established here, a new adit, 80 fathoms in length, will require to be brought in lower down the hill, so as to reach the present mine 10 fathoms below the entrance, and drain the whole of it, along with a considerable quantity of new ground, which the natives report to be very rich, but say they cannot work it on account of the accumulation of water.

About a couple of hundred yards to the north, and in the same hill, is another deposit of copper. This is laid open to the surface during the rainy season, and allowed to fall together again, as soon as the water, employed by the natives to carry off the talcous mud from the ore, ceases to be plentiful. An awkward attempt had been made by the present *tsakadar* (lessee of the mine), to mine this with timber, but without success; and it was at the time I visited the spot abandoned, and the works lying full of water. To have an effective mine here, it will be necessary to sink a perpendicular shaft of 12 fathoms, and to bring in an adit about 50 fathoms in length, so as to come under the works above described about eight fathoms, and lay open a space of ground, also believed to contain a considerable quantity of ore.

Sheera mine—Pergunah of Barrabesry.

The mine of *Sheera* is situated on the northern side of a hill, somewhat higher than the one at *Rye*, and is entered by an adit, which is driven south in the course of an evidently non-metallic vein, (no traces of copper being found in it :) and this the natives must have made use of, to assist them in penetrating the dolomite rock, which, with beds of talc, constitutes here likewise the formation where in the ores of copper are discovered. Nearly 38 fathoms from the entrance, the adit strikes a copper lode, on which a level passage is driven, that continues westward, its course being about 10° south of west, and dip northerly from 45 to 50° . Scarcely any thing could be seen of this lode, which has been all taken away, and its place supplied with timber, until I arrived at the end of the level, (18 fathoms in length,) where it seems to inter-

* Extensive beds of copper pyrites occur in the mining districts of Sweden.

meet another lode, running in a northwest and southeasterly direction, which is poor at this particular locality. The former lode resembles the ore at *Rye*, but the ore is harder and more contaminated with iron pyrites.

The adit is also continued south from the strike of this lode a few feet, when it enters a confused mass of timbering and stones, having the appearance as if ore had been excavated in every direction; it then runs 15° west of south, and is about 10 fathoms in length. At the end of this passage, a pit is sunk (said to be 35 feet deep) on a lode running 5° north of west. When I penetrated to the spot, it was half full of water, which six men were constantly employed in lifting up in small buckets, to prevent the flooding of the working part of the mine, with which there is a communication, as is evident from the currents of water and air that come from that quarter.

The *teskadar* reports the lode at the bottom of the pit to be very rich, but complains of deficiency of hands to work it. Should the passage of the mine be enlarged, men of a different caste from the miners might be employed to draw off the water, and the whole of the miners set to work at the ores. There is no want of ventilation, as the air is constantly circulating from the works to the pit, and from thence to the strike of the first lode, not far from which are two holes brought down from an old adit, formerly the drainage of the mine. The appearance of this mine warrants the repairing and enlarging of the adit, which is the first thing to be done; more satisfactory data will then be obtained as to the character and number of the lodes, than can be hoped for in its present wretched state: the bringing in of a new adit may then be taken into consideration.

I shall now offer a few practical observations by my mining assistant, contrasting the modes of working here with what he has been accustomed to witness in Cornwall.

1. "The mode of excavation.—This is performed with a very indifferent kind of pick-axe; the handle being made of a piece of wood with a knob at one end, into which a piece of hard iron is thrust and sharpened at the point. This, with a miserable iron hammer, wedge and crowbar, constitutes all the apparatus that the native miner has to depend upon. It is plain that with such tools no hard rocks can be penetrated, nor can the softer ones be worked with much facility; and to this fact may be attributed the universal smallness of the passages throughout the mines; as the native miner can have his passage no larger, than the rock which encloses the ore and its matrix will admit of.

"I would therefore suggest that proper pickaxes and steel gads

(wedges) be substituted instead of the inefficient tools in use, and when blasting may be required the necessary materials should be provided. On the other hand, where timber may be requisite, sawn wood should be used to render the passages permanent and secure, in place of the branches of trees now employed for that purpose; and I judge from experience, that a man accustomed to work under these improved circumstances will excavate and extend a large and commodious passage in a less time by one-third, than that occupied for the same distance in excavating the miserable holes under the native mode of working.

2. "The conveying the ores and refuse from the mine.—This is performed by boys, who pick up the stuff with their hands, and put it into skins, which they drag along the floor to the entrance of the mine. In place of this method, wheel-barrows and shovels should be used, when the passages are enlarged; and a boy might then easily discharge *four times* as much as he can at present.

3. "The pulverizing of the ores.—This is performed by women: a large hard stone being placed on the ground on which they lay the ores; they then either with a stone, or hammer, more frequently the former, proceed to pulverize them and to pick out the impurities: in this manner a woman may manage from one to two maunds per day, according to the hardness of the ores. In Cornwall, a woman will pulverize from 10 to 15 hundredweight per day, according, as in the former case, to the nature of the ores. The method in practice there is, first to dispense with the picking:—secondly, to have the ores elevated, so as to enable the individual to stand while working, and to have a plate of iron about a foot square and two inches thick on which the ores are broken with a broad flat hammer: the impurities are then finally separated by a peculiar mode of dressing the ores with a sieve, by which a boy gets through with from one and a half to two tons per day. The ores are conveyed to the women, and from them to the boys by a man who attends for that purpose.

4. "The washing and cleansing of the poorer ores from slime and other impurities.—This also is performed by women, who carry the stuff from the entrance of the mine to a stream in baskets, where they contrive, by dabbling with their hands, to wash off the mud and finer particles of earth. They then proceed to pick out all the pieces of ore they can get hold of; or in the case of what may be submitted to the water in a comminuted state, they work this against the stream, so as to gather it clean at the head of a small pit by handfulls; but, from the bad construction of the pits, it is with difficulty that this is performed. After picking up any larger pieces of ore, which may have gone back

with the stream, they scoop out the refuse with their hands, and then proceed with another charge. In Cornwall, one woman provided with a wheel-barrow and shovel for the conveying and washing of the ores, and a boy with a sieve for dressing them, as formerly mentioned, would accomplish an equal task to that of ten women on the system described.

5. "The drainage of the mine.—In the first place, this is managed in a proper manner by an adit. But whenever any attempt is made to go below it, as is the case in most, if not all the mines, the water is then raised in wooden buckets handed from one man to another, until they reach the adit into which they are emptied. In this manner six, ten or even more men may be employed, whilst only an inferior number can be spared for excavating the ores. At the *Sheera* mine, for instance, six men are constantly engaged in lifting up the water, and there are only two at the ores: the water raised by these six men, could be effected with a hand-pump by one man: but, in order to keep the pump constantly going, two men might be required, and the remaining four added to the number of those who are excavating.

Lastly—"To obtain sawn wood for rendering the passages permanent and secure, the art of sawing, which is entirely unknown to the people here, ought to be introduced."

The foregoing remarks having reference simply to the rude and inefficient mode of work now actually in practice in this province, the rectifying of them will form the first stage of improvement. No allusion has hitherto been made, to the vast results from machinery, which in England may be witnessed in almost every mine; nor have the important processes of reducing the ore to the metallic state, been yet adverted to, though these are on a parallel with what has been said on the subject of extraction*. However, from the statements which have been made, it may be seen, that notwithstanding the mountaineer receives but a very slight remuneration for his labor, yet considering the extravagant manner in which that labor is expended, an exorbitant rate is paid for the really serviceable work performed. Thus it is not so much the grinding avarice of the *teekadar*, that oppresses the miner, as the system upon which he works, that cannot admit of his being much better paid. To relieve this class of people, therefore, and raise their condition, it is much to be desired, that a new management should be adopted; while, on the other hand, were the mines equal to the very best in Cornwall, no great profit could ever accrue from them, worked as they are at present.

* The charcoal smelting furnaces of Sweden appear to me to be the best suited for these mountains.

The almost inaccessible state of these mines, and the great difficulty of making any observations at all in such places, as well as the interruption alluded to heretofore, namely, the illness of my assistant whom I was obliged to bring back to cantonments in a very precarious state of health, have prevented me from making this report so full as I should have wished. It appeared to me desirable to take, in the first instance, merely a rapid glance at the whole of the copper mines throughout the province, before the setting in of the rains, (when they become inaccessible,) with the view of determining the most eligible locality for bringing the question of their productiveness to the test of experiment. The mines of the western pergunahs, which, by all accounts, are the richest, I have not yet had an opportunity of examining; but though my plans have been frustrated in that respect, I can nevertheless recommend a trial of one of those I have already visited; to wit, the *Rye* mine. It is unfavorably situated for a new adit; but from the appearance of the ground, and the probability of cutting new lodes underneath by traverses from the one now worked, the superior quality of the ore, together with what information I have been able to gather from the natives, as to the character of the lode at a greater depth, I consider it in every way the best suited for an experiment, an estimate of the probable expense of which is herewith annexed*. Should the government deem it expedient to authorize the work being commenced, my mining assistant, Mr. WILKIN, is fully competent to carry on the detail; and Lieut. GLASFORD, executive engineer of *Kumaon*, has offered his services to superintend, as far as his other duties in the province will permit, and to further the undertaking by every means in his power.

I shall now conclude with a summary of the different points of inquiry, upon which I should wish to ground my next report of the mines of copper in this province.

Some account of the rocks, considered in an economical point of view.

The ores seem to be of the usual varieties, and need merely to be specified. Assays from selected specimens hardly give a correct estimate of produce†.

The important thing to be noticed is, the quantity that may be obtained. This will depend principally on the width of the lodes, and

* It is estimated by Capt. D., that the cost of the proposed new adit at Rye will be above 2400 rupees.

† The working ore I have hitherto seen has been copper pyrites, grey copper ore, and the green-carbonate I have met with, but in too inconsiderable quantity to deserve notice.

how far that width is occupied by solid ore, or how much it is intermixed with spar, talc and other matters*. Also, on the continuity of branches of ore to a reasonable extent, or, on the other hand, on their being short and occurring at considerable intervals.

Again, the character of the lodes will have to be described,—whether beds conforming with the stratification of the country, or veins traversing the same.—Whether numerous, parallel to each other, or crossing.—What their direction usually is by the compass.—Whether vertical, or at what angle they deviate from being vertical.—Whether they are rich at particular places, as where veins intersect each other.—What is the character of the mineral matter, filling the lode where ore is deficient.—Whether this character is different, when near the surface, or when observed at greater depths.—What proportion of the lode appears to be metalliferous, and what barren.

Facilities for working.

Many considerations come under this head—character and habits of the natives—rate of payment for labor—state of roads and means of transport—supply of timber and other articles required—means of drainage, such as levels for obtaining adits—falls of water for machinery—streams whether constant and sufficient. As no mining operations upon an extended scale can be carried on without a command of cheap and good iron, I shall next advert to the mines and manufacture of this metal, and point out the peculiar advantages possessed by these mountains, over other parts of India, for improvements in that valuable branch of the natural resources of the country.

September, 1838.

III.—*Observations on six new species of Cyprinidæ, with an outline of a new classification of the family. By J. McCLELLAND, Esq., Bengal Medical Establishment.*

It is almost unnecessary to refer to the following passage which is inserted under the head of European correspondence, page 110, volume I. of this Journal, but it is so apposite to my subject that I must be excused for quoting it as it stands. “I spent some time in *Paris* this summer and saw a good deal of M. CUVIER. I used the freedom of mentioning your name to him and your desire of taking

* In the western pergunahs, Captain HARRERT, in his geological report particularises grey, purple, and vitreous copper ore.

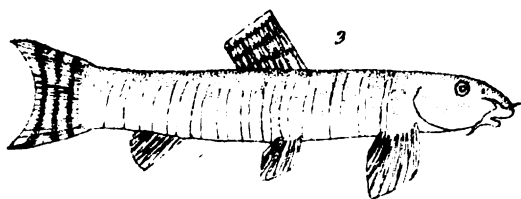
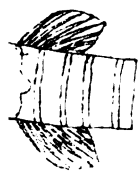
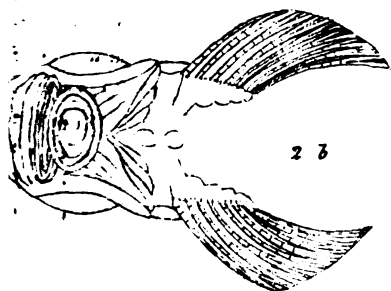
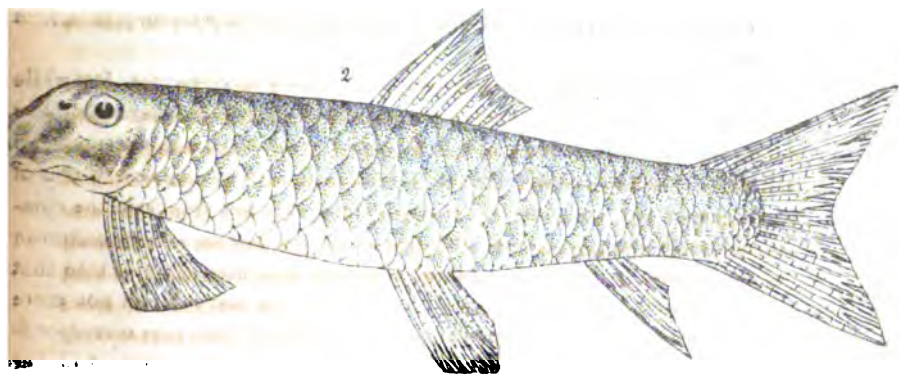
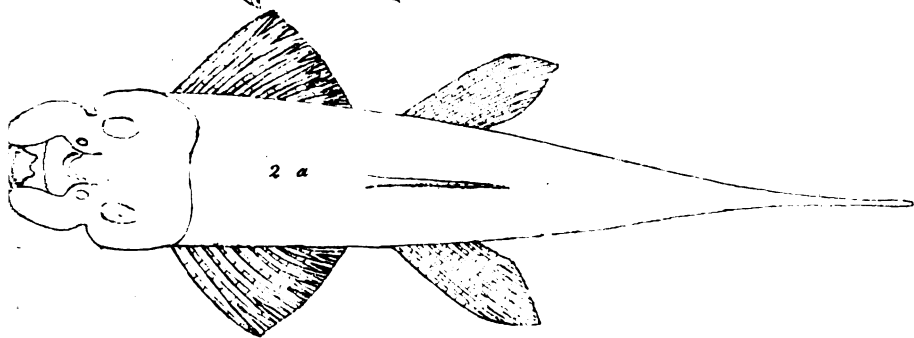
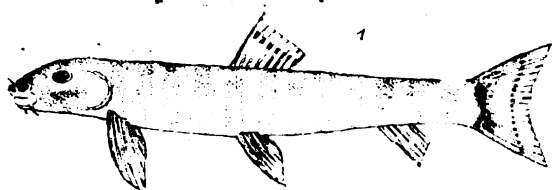
advantage of your position to forward the interests of science. I asked him if there was any particular object in natural history which I might suggest to you as a desideratum which could be supplied from India. He immediately replied emphatically 'ah certainement, les poissons d'eau douce;' he added that some gentleman in Calcutta had already sent him a good many of those of the lower rivers and parts of the country, but that they had no account of those of the higher parts."

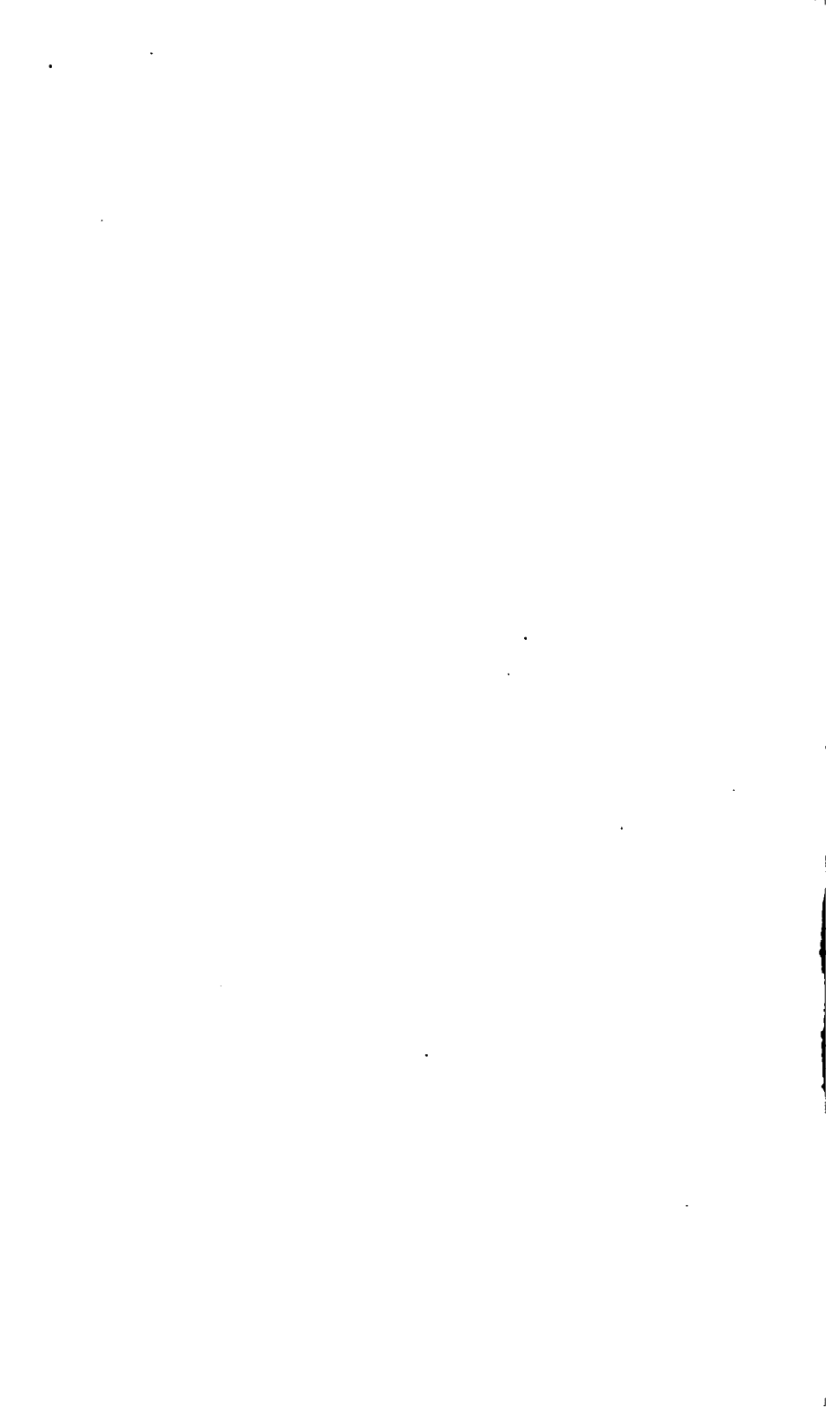
BUCHANAN states, that while engaged in the provinces remote from the sea he met with few species he had not before seen, but previous to his departure for Europe, on returning to the vicinity of the large estuaries he daily met with unknown species. In the large rivers above the influence of the tides he therefore supposed that not more than one species in five escaped his attention, while of those of the estuaries he had not described above one half. These last have recently engaged the attention of Dr. CANTOR, who during the season of 1836-7 accompanied the surveying expedition under Capt. LLOYD as medical officer, while I have been engaged in the former since my journey to Assam in 1835.

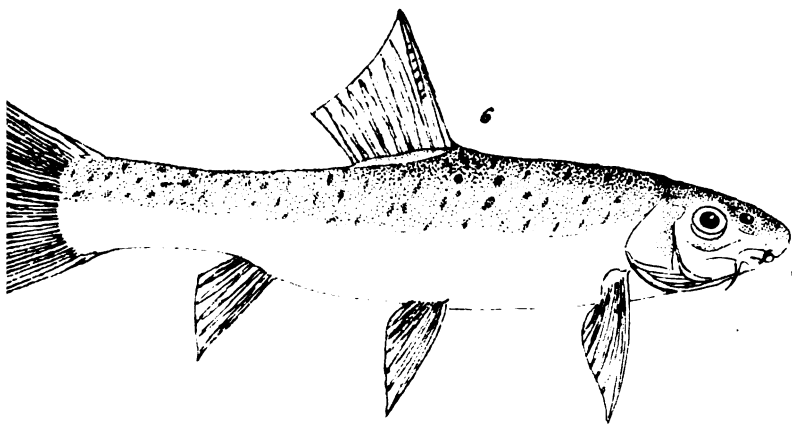
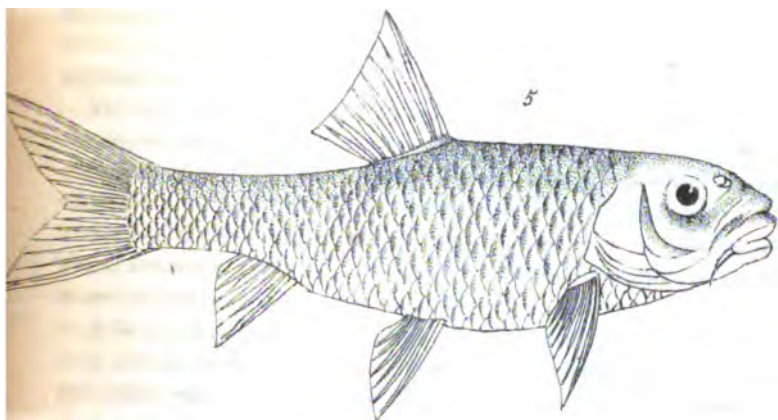
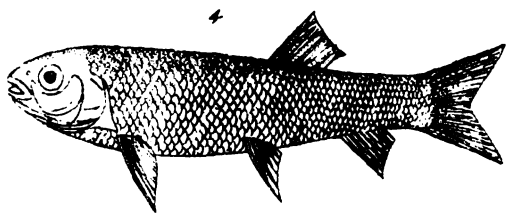
The results prove the accuracy of BUCHANAN's remarks, for while most of those obtained by Dr. CANTOR in the *Sunderbuns* have proved to be new, not more than one in five of the fresh water species inhabiting the large rivers in the interior, escaped the observation of BUCHANAN; but when we trace those rivers upwards from the commencement of the rapids into the mountains, the number of unknown forms augments in proportion to those that have been described, so that we may reverse the ratio given by BUCHANAN, and consider not more than one in five as having hitherto been made known, thus corresponding with CUVIER's notion 'that we have no accounts of those of higher parts.' Still, if CUVIER had been acquainted with the extent of BUCHANAN's labours on the subject, he would have seen that the whole of that author's *Garræ* are Alpine forms. This peculiar group which I have incorporated with the genus *Gonorrhynchus* is fully described in the Gangetic fishes, but the drawings having been retained with the author's extensive collections of papers in every department of natural history at the library of the botanic garden, no figures of them were given to the public by BUCHANAN, and unfortunately CUVIER and other ichthyologists only adopted such of his species as were figured in the work referred to.

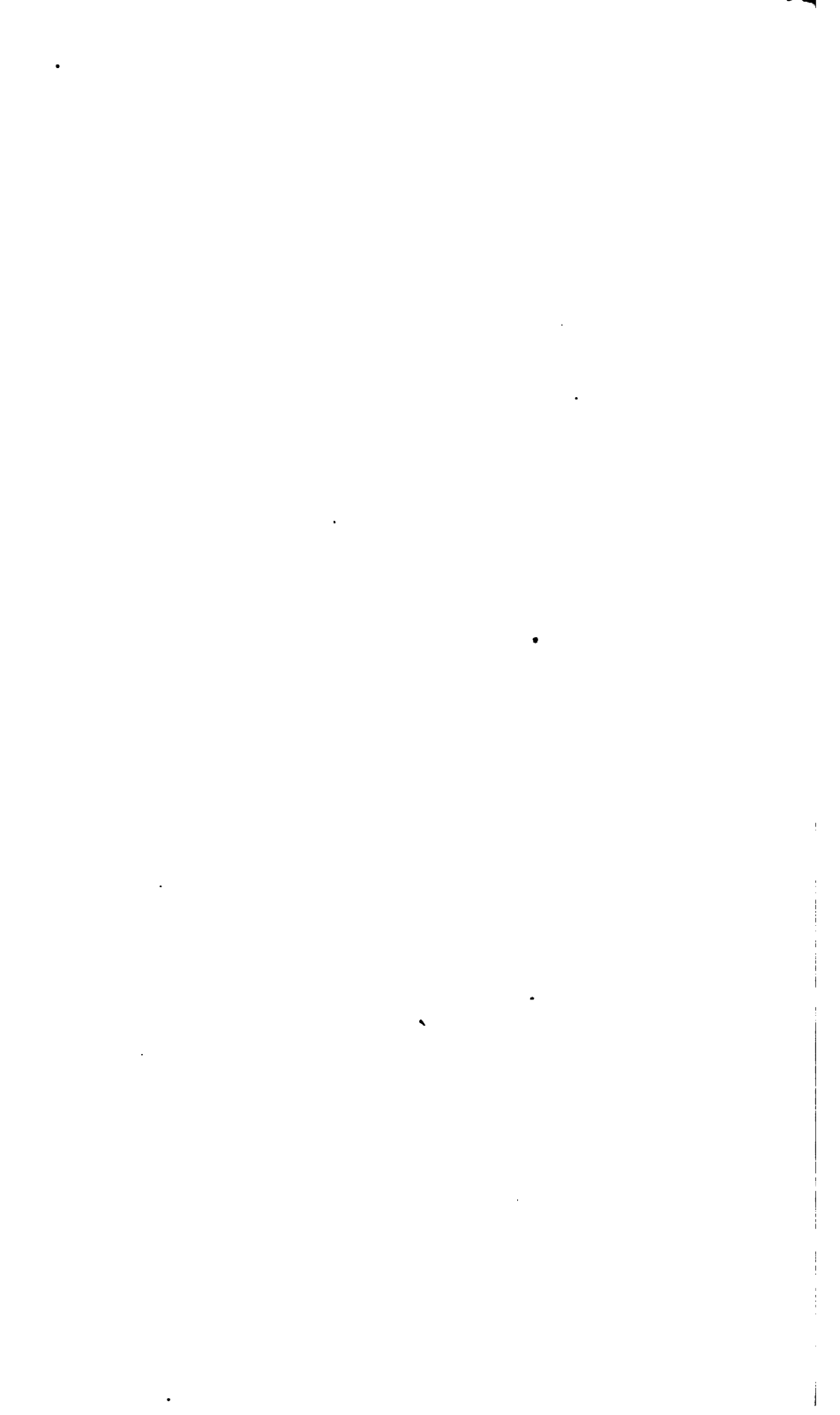
CYPRINIDÆ.

One dorsal fin, stomach without cæcal appendages, branchial membrane with few rays.









I. *Sub-fam. PÆONOMIÆ*, J. M.

Herbivorous.

Mouth slightly cleft, either horizontal or directed downwards; the stomach is a lengthened tube continuous with a long intestinal canal; colours plain, branchial rays three.

1. Gen. *Cirrhinus*. Lower jaw composed of two short limbs loosely attached in front where, instead of a prominent apex there is a depression; no spinous rays in the dorsal, lips soft, fleshy, and furnished with cirri.

Sub-gen. *Labso*, Cuv. Cirri small or wanting.

2. Gen. *Barbus*. Lower jaw composed of two lengthened limbs united in front, so as to form a smooth narrow apex. Dorsal fin preceded by a strong bony spine, lips hard, four cirri, intermaxillaries protractile.

Sub-gen. *Oreinus*, J. M. Mouth vertical, lower jaw shorter than the upper, snout muscular and projecting, suborbital plates concealed.

3. Gen. *Cyprinus prop.* Body elevated, lower jaw short and rounded in front, lips hard, thick, and without cirri; dorsal long.

4. Gen. *Gobio*. Dorsal placed over the ventrals and like the anal short, and without spines. Lower jaw shorter than the upper, and either round or square in front; lips thin and hard.

5. Gen. *Gonorrhynchus*. Mouth situated under the head which is long and covered with thick integuments. Body long and sub-cylindrical, snout often perforated by numerous mucous pores. Dorsal and anal short, opposite, and without spines.

II. *Sub-fam. SARCOBORINÆ*, J. M.

Carnivorous.

Mouth directed upwards, widely cleft and horizontal, with a bony prominence more or less distinct on the symphysis of the lower jaw, serving as a prehensile tooth. Colors bright, disposed in spots and streaks, or displaying a uniformly bright lustre. The stomach is a lengthened sack ending in a short abdominal canal. Branchial rays three.

1. Gen. *Systomus*, J. M. Intermaxillaries protractile; dorsal and anal short, the former opposite to the ventrals. Body elevated and marked by two or more distinct dark spots. Diffuse bright spots either on the fins or opercula, prominence on the jaw obscure; scales large.

2. Gen. *Abramis?* Cuv. Body short and elevated, a short dorsal is placed opposite to the ventrals, anal long. Intestine of the only Indian species short as the body.

3. Gen. *Perilampus*, J. M. Head small, obliquely elevated above

the axis of the body. Dorsal opposite the anal which is the longer fin; apices of the jaws raised to a line with the dorsum which is straight, while the body below is much arched. Sides often streaked with bright colors, particularly blue, abdominal tube small, and little longer than the body.

4. Gen. *Leuciscus*. Dorsal small, opposite the ventrals, mouth and head horizontal and placed in the axis of the body, scales and opercula covered with a silvery pigment.

5. Gen. *Opsarius*, J. M. Mouth widely cleft; body slender and usually marked with transverse green bars or spots. Dorsal small, without spines and placed behind the middle; anal long. Intestinal canal very short and extending straight from the stomach to the vent.

III. Sub-fam. APALOPTERINÆ, J. M.

Body elongated; sub-cylindric, and enveloped in mucous; all the fin rays soft; intestines short. Branchial rays vary from two to six.

1. Gen. *PACILIANÆ*, SCHN.

Sub-gen. *Aplocheilus*, J. M. Head flat, with the eyes placed on its edges, and the mouth broad and directed upwards, with a single row of minute teeth placed along the edges of the jaws; caudal entire.

2. Gen. *Platycara*, J. M. Head flat, with the eyes placed on its upper surface, fins thick and opaque. Pectorals large, anal small, caudal bifid, mouth without teeth and directed downwards. Stomach and intestine form a continuous fleshy tube little longer than the body.

3. Gen. *Psilorhynchus*, J. M. Muzzle elongated and flattened, eyes placed far back on the edges of the head, mouth small and suctorial, without cirri, opercula small, caudal bifid, dorsal opposite to the ventrals.

COBITIS, LINN.

Head and body elongated and little compressed or elevated, the snout is long, directed obliquely downwards, and projecting slightly in front of the mouth, which is surrounded with short muscular filaments.

4. Gen. *Cobitis propria*, J. M. Caudal entire, large, and ornamented with bars or spots; prevailing colour various shades of brown disposed in more or less dense nebulae.

5. Gen. *Schistura*, J. M. Caudal bilobate, prevailing colors green, usually disposed in zones and cross-bars.

It would be unnecessary here to offer any remark on the foregoing outline of the arrangement to which I have resorted in this family, with the view of introducing our Indian species to such groups as might harmonise with those of the Regne animal. This task however easy it may seem was one that could only be attempted after long study in

India, since CUVIER himself in referring such of BUCHANAN'S species as are figured in the Gangetic fishes to his groups, generally misplaces them even according to his own principles, for want of sufficient information regarding their forms, to say nothing of habits and structure; and there can be no doubt that if CUVIER had been possessed of sufficient knowledge of our Indian species he would have subdivided the family and characterised its groups nearly as I have done.

In collecting materials I have hitherto been chiefly indebted to Mr. GRIFFITH. I have now however to acknowledge my obligation to Dr. MACLEOD, Inspector General of H. M. hospitals, whose collection consists of six different kinds caught promiscuously in the streams at Simla, and these form as many species not before known, thus promising an unprecedented accession of undescribed forms in this quarter, as well as along the whole line of the *Himálaya*, when a more diligent search has been made for them: and it is this circumstance that induces me to publish these species at once, rather than keep them back for the more copious details of the family now in course of publication. To those who are desirous of contributing to this interesting branch of natural history, which has been hitherto so much neglected, or I should rather say, suppressed in India, I may remark that specimens are always more satisfactory than drawings, however carefully executed; that larger fishes may be skinned and prepared with arsenical soap as easily if not more so than any other animals, and that the smaller kinds, provided not more than half a dozen be put in a quart bottle of good bazar spirits, will keep during a journey in the cold season from the most distant parts of India. Should specimens exceed the size of the finger, their skins may be thrown into spirits in which state the chance of their arriving safe will be more secure; notes regarding their habits and the parts removed will render such specimens of still higher value.

Fam. CYPRINIDÆ, Cuv.

Sub-fam. PÆONOMINÆ, J. M. Gen. Barbus.

*Species, Barbus Chislynoides**, J. M. Pl. LVI. f. 2. As. Res. XIX.

Pl. LVII. f. 5.

Length of the head to that of the body as one to two and a half, intermaxillaries protractile, lips round, smooth, and thick with four cirri. Branchial rays large, and ascend behind as high as the base of the pectorals; the suborbital bones are concealed beneath thick integuments. The body contracts suddenly in depth under the base of the dorsal and over that of the anal fin, 33 scales in length along the lateral

* From *Xalavoids*, that has thick lips.

line, each marked with a black spot at the apex, and nine in an oblique row from the base of the ventrals to the dorsum. The fin rays are D. 10, the three first spinous, united and smooth, P. 16 small, V. 9 larger than the rays of the pectorals, A. 7, C. 18.

The stomach and intestine form a small continuous canal equal to about thrice the length of the body.

Habitat, mountain streams at Simla†.

The blunt form of the head and general sculpture of the body, the size and markings of the scales afford a resemblance to *Cyp. chedra*, BUCH. (*Leucis-brachialis*.)

Sub-gen. OREINUS*, J. M.

The following species of this sub-genus which Dr. MACLEOD obtained at Simla, corresponds in its general characters with *Barbus guttatus*, J. M. As. Res. XIX. Pl. XXXIX. f. 1. before obtained by Mr. GRIFFITH at Panuka in Butan, but they differ from each other in specific characters. There can be no question about the propriety of separating them from the true *Barbels*, now that a second species has been found in a similarly elevated position, 1000 miles from the locality of the first. Their spotted bodies, minute scales, fleshy snout, by means of which the actions of the mouth are entirely performed, mark them as different from the ordinary *Barbels*, while their comparatively short intestinal canal and serrated dorsal spine, remove them still further from *Gonorhynchus*.

Species, *Oreinus maculatus*, J. M. Pl. LVI. f. 3. Length of the head to that of the body as one to three and a half; body marked with shapeless spots dispersed irregularly on the back. The three first rays of the dorsal are spinous, and the third serrated behind. The fin rays are, D. 11 : P. 18 : V. 10 : A. 5 : C. 19.

Intestinal canal capacious, and forms one continuous tube with the stomach altogether about four lengths of the body, containing a copious green matter probably vegetable.

Habitat, mountain streams at Simla†, where it attains six or eight inches in length.

The anal fin of the Butan species contains ten rays, while that of the Simla species contains but five. The spots on the first are round and distributed over every part of the body and fins, but Mr. GRIFFITH observes, that they disappear on large individuals or become faint.

* From *Oreinos*, pertaining to mountains.

† Found by Dr. MACLEOD.

II. Sub-fam. SARCOBORINÆ, J. M.

3. Gen. PERILAMPUS, J. M.

Species, *P. elongatus*, J. M. Pl. LVI. f. 1.

Head and fore part of the body deep, humeral plates slightly exposed behind the opercula, snout round and terminates abruptly in front of the eyes; about 46 scales along the lateral line, eleven in an oblique row from the base of the ventrals to the dorsum. The prominence on the apex of the lower jaw very minute, colors plain, a minute black dot at the apex of each scale. The fin rays are, D. 9: P. 13: V. 9: A. 10: C. 19.

The stomach and intestine together form a tube about the length of the body.

Habitat, mountain streams at Simla*—length two inches.

The only remarkable thing about this species is, that the tongue which is usually much developed and rugous in the other *Perilamps* appears to be almost wanting in this species, which may lead us to infer that it differs in habit from the *Perilamps* of the Plains which are all insectivorous.

III. Sub-fam. APALOPTERINÆ, J. M.

2. Gen. PLATYCARA, J. M. (*Balitora*, GRAY.)Species, *P. nasuta*, J. M. Pl. LV. f. 2, a. b.

Snout abruptly depressed between the eyes with a large pit between the nostrils, body strong and sub-cylindric, about 34 scales along the lateral line and eight in an oblique row from the base of the ventrals to the dorsum. The fin rays are, D. 10: P. 16: V. 9: A. 6: C. 15.

Habitat, Kasya mountains†—length six inches.

This species differs essentially from either of those figured in HARDWICK'S Illustrations, vide As. Res. XIX. Pl. XLIX. fs. 1, 2; a species corresponding, I suspect, with *Balitora maculata*, GRAY, was found by Mr. GRIFFITH in Butan; from that specimen, which unfortunately was much injured when it arrived in Calcutta, I have only collected a few particulars regarding the abdominal viscera in addition to the information regarding its habits obtained by Mr. GRIFFITH.

V. Gen. SCHISTURA, J. M.

Species, *S. montana*, J. M. Pl. LV. f. 1.

Depth of the body to its length as about one to eight, six cirri and a single suborbital spine under each eye, a black streak at the base of the caudal, and about twelve broad streaks crossing the body; with one row of black dots crossing the dorsal rays, and a faint row crossing

* Found by Dr. MACLEOD.

† Found by Mr. GRIFFITH.

those of the caudal. Pectorals and ventrals long and lanceolate. The fin rays are D. 8 : P. 10 : V. 8 : A. 6 : C. 18.

Habitat, mountain streams at Simla*. Length two and half inches. Species, *S. rupecula*, J. M. Pl. LV. f. 3, a. b.

About fourteen broad bars on either side, and three across the caudal and dorsal ; without suborbital spines, six cirri, four in front, and one at each corner of the mouth. The third ray from the upper and lower margins of the caudal a little longer than the outer ones. Lower surface of the body and head nearly flat, pectorals and ventrals lanceolate.

The fin rays are D. 8 : P. 10 : V. 8 : A. 7 : C. 16.

Habitat, mountain streams at Simla†. Length two inches.

The air vessels of *Schistura* I have found in a bilobate case, rather perhaps cartilaginous than bony, placed over the entrance to the oesophagus : a magnified figure of this case is given, As. Res. XIX. Pl. LV. f. 4, while the natatory bladder of the true loaches, *Cobitis propria*, is contained in an oval bony case of only one lobe or cell (fig. 5, loc. cit.) also placed over the entrance of the oesophagus, where from its prominence as well as the minute spines with which its surface is covered it may probably perform some function connected with deglutition.

IV.—Report upon the Coal beds of Assam. (Submitted to Government by the Committee appointed to investigate the Coal and Iron resources of the Bengal Presidency, as a supplement to their first printed report.)

Capt. VETCH in a letter to the commissioner of Assam, dated 25th November, 1837, mentions having found detached specimens of various kinds of coal in the *Jellundee Belseerve*, and *Boorooles* rivers that fall into the *Bramaputra* from the *Butan* mountains between the 92° and 93° degrees of east longitude : at various distances from 14 to 20 miles from their confluence with the main river, and not far from the foot of the mountains.

The situations in which these specimens were found by Capt. VETCH are marked by the letters A, B, C, on the annexed sketch-map of the coal districts in Assam.

The great number of more advantageous situations in which coal has been found in Assam renders the question as to the quality and precise situations of the beds respectively from whence Capt. VETCH's specimens were obtained, a matter of secondary importance, but a proof so unquestionable of the existence of coal at different points for an extent

* Found by Dr. MacLeod.

† Found by Dr. MacLeod.

of at least forty miles along the foot of the *Butan* mountains, connected with the fact of its having been discovered in a similar way by the late Mr. SCOTT on the banks of the *Teesta* river at the foot of the *Sikim* mountains, three degrees less to the eastward, tends to encourage the hope of finding coal in the lower ranges of the same chain, in some situation in which it may be available for useful purposes.

Regarding Captain VETCH's specimens, Captain JENKINS observes : " These discoveries of coal on the north bank of the *Bramaputra*, and over a tract of country 50 miles in length, appear to me to add greatly to the importance of previous discoveries of coal on the south banks of the river, for I conceive it may be presumed that we have by no means obtained a knowledge of the full extent of the coal beds in *Assam*, and that it is not improbable, that they are co-extensive on both sides of the valley, and will be found nearly throughout its whole extent."

To understand the value of the other two more useful discoveries of coal that have been made in *Assam*, subsequently to the publication of the last reports of the committee, it is necessary to examine the value in a practical point of view, of what has been previously made known on the subject.

Captain HENDERSON refers to six places at which coal had been found, indicating the existence of an extended line of coal districts from *Gowahatti* to *Bramakund*. However probable this may be, we have as yet done little to develop the fact, so as render it practically useful ; and in all inquiries of this kind, it is no less important to point out where information is defective, than it is to bring forward successful results.

If we suppose an extensive series of coal districts to exist in *Assam*, corresponding with the numbers marked on the sketch-map already adverted to, the more western beds from their vicinity to Bengal are entitled to our first consideration.

As to No. 6, however, the most western of all, and supposed to be situated on the *Kopili* river, within sixty miles of *Gowahatti*, we can find no information ; so that the existence of coal at this very desirable point rests merely on a specimen having been found in the sands of the stream by Mr. HUDSON.

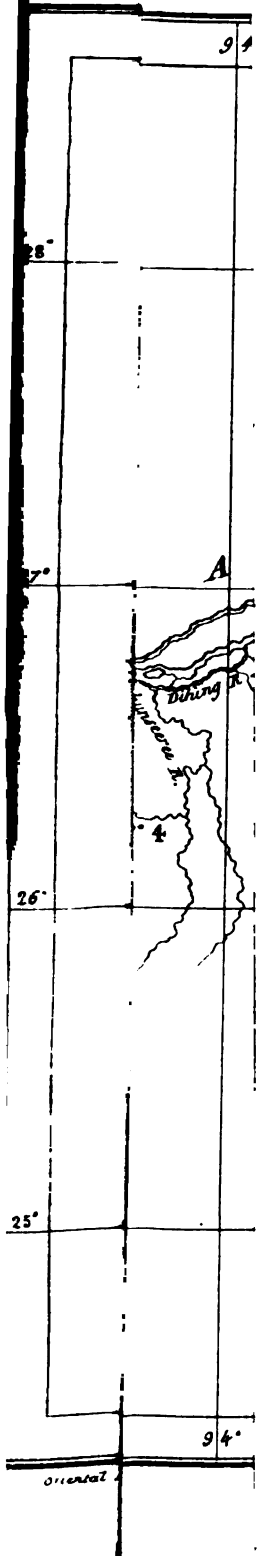
Of the next coal, No. 5, we have a very clear and distinct account, as far as it goes, in a letter from Ensign BRODIE to Captain JENKINS, dated 17th May, 1837, which we can do no better than give at length. Ensign BRODIE observes—" With reference to your letter of 23rd March, I have the honor to forward you a sketch from Mr. HUDSON, showing the spots where coal has been found within this division (*Nowgong*) ;

they are three in number, but the only bed of coal the site of which is known, is that on the *Joomoona*, a little above the falls. I went to this myself during the last cold weather, and raised about 8 or 10 maunds, specimens of which I sent to you at the time. What I got did not appear to be of a very fine quality, having apparently a good deal of earthy matter mixed with it, but it is more than probable that if the vein were worked further, excellent coal would be found. The thickness of the strata is about $2\frac{1}{2}$ feet. I laid the surface bare for some ten or twelve yards, but how far the vein extends beyond this I am unable to say. I believe no difficulty would be found in working the coal, if it ever should become an object of importance to do so. The population is certainly scanty, but then it is composed of a class of people, Mikeers and Kacharees, who can be taught, and will willingly put their hands to any thing that will afford them a moderate remuneration for their labour.

"The bed is situated at the foot of a small hill on the east side of a little nullah, which runs from the north into the *Joomoona*, about half a mile or three quarters of a mile above the falls of the latter, the distance of the coal from the *Joomoona* itself not being more than 80 or 100 yards. This river is at all times navigable to the falls by canoes, and two or three of these lashed together can take down a considerable cargo. The river is deep again above the falls, so that it is only for about 300 or 400 yards over these, that porters would be required; a boat from *Gowahatti* would, on an average, reach the falls in 20 days, and return in 10; but this would vary with the season.

"Pieces of coal of good quality have been picked up by myself in the bed of the *Nambua*, a small stream running into the *Dhunsoree* from west, but we have no information as to the position of the beds."

The locality of these last fragments is marked No. 4 in the annexed sketch-map, and beyond the specimens picked up by Ensign BRODIE, we have no further evidence of the existence of coal at the place in question. Here then is the sum of all we know regarding coal in lower Assam: the particular part of the province in which, if found in sufficient quantity and of good quality, it would most favourably compete with the coals of Bengal in the *Calcutta* market. It is desirable therefore that the indications of coal in this quarter should be thoroughly investigated. Captain JENKINS, impressed with the importance of this, has made repeated efforts to have the district examined, and when the scientific mission was in Assam, he directed Dr. WALLICH, to detach one of the members of the mission for this pur-



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pose, which was accordingly done, and eight days were allowed for the duty; but this period being too short, even to reach Lower Assam from the place at which the order was given, it is needless to say the investigation was not undertaken.

The next coal noticed in the sketch map, No. 3, is that which has been longest known, a large quantity of superior coal having been raised from this bed by Mr. BRUCE in 1828*.

It is situated on the *Suffry*, an impracticable tributary of the *Disung*, but at what distance from the latter does not appear in the account given of the place by Mr. BRUCE, who lost several boats† in his attempt to reach the site of the coal. There is a small range of hills which offers some impediment, (but Mr. BRUCE states that it might be overcome by widening the pass,) and by the formation of a road for hackeries. Inferior coals were observed by Mr. BRUCE, crossing the bed of the stream in different situations, so that, if these last beds should be found to afford good coal, the difficulties would be considerably less in reaching it there than in the higher situation; but in so remote a part of Assam as this, perhaps no coal would be worth working, unless it occurred under more favorable circumstances for transmission, than characterise any of the *Suffry* beds.

The *Namroop* coal, No. 2, in the annexed map, first observed by Lieut. BIGGE and Mr. GRIFFITH, though like the last, of first rate quality, and the *Bruma-kund* coal, No. 1, found by Captain WILCOX, are probably beyond the reach of being profitably worked and introduced to the navigable part of the *Bramaputra*; so that of the six localities in which coal had been found in Assam, at the time the preceding reports of the Committee were written, one situation only (*Suffry*) was known, from whence coal might be obtained, and that with some difficulty, for local consumption in the province, at a cheaper rate than it could be supplied from Bengal.

Having thus stated what had been done up to the period at which our last reports were published, we are the better prepared to show the value of what has since been done in Assam. Coal has been found by Captain JENKINS himself at *Boorhath* on the banks of the *Disung*, the main river to which the *Suffry* coal had to be carried over so many difficulties. By this discovery therefore all these are at once obviated.

Another coal bed has been found by Captain HANNAY near *Jypoore*, about twelve miles northeast of *Boorhath*, and within three miles of

* A sample of it was tried at the mint, and found to be equal to *Cherra Puzi* coal.

† Probably canoes.

the *Boree Dihing*, also an excellent river. Full details regarding each of these discoveries, having been published in the proceedings of the Asiatic Society for February last*, it is unnecessary to enter into them here further than concerns the extent of the beds and the quality of the coal.

At *Boorhath*, beds occur in two situations, first close to the channel of the *Disung*, at the commencement of a rising ground about a mile from the village of *Boorhath*. This bed is described by Captain JENKINS as visible for about a hundred yards in length, and eight feet in thickness, above the water and gravel of the stream.

The second bed is about a quarter of a mile distant from the *Disung*, at an elevation of about 50 or 60 feet, and exposed to the extent of 200 yards in length in the bank of a little water-course. It was not visible in continuous masses, being concealed here and there by rubbish fallen from above, but it cropped out, says Captain JENKINS, at intervals, and always seemed to bear a thickness of several feet. The coal in both these beds appeared to Captain JENKINS to be of first rate quality, and nothing could well be more favorable than the position for working, nor for the transport of the coal as far as the waters of the *Disung* admit, but this stream is barely navigable for laden canoes of small size in the dry weather, although in the rains it has a depth sufficient for large boats, and its stream is no where impetuous†.

The situation of this coal is about 50 miles from the confluence of the *Disung* with the *Bramaputra*, so that laden boats might descend during the rains with ease from the coal beds to the great river in three days, and return in six. The point at which the *Disung* joins the *Bramaputra* is about 180 miles above *Gowahutties*.

The *Jypoor* beds are described in a letter from Captain HANNAY to the commissioner of *Assam*, under date 1st February, 1838‡: Cap-

* Journ. 1838, pp. 169 to 366.

† Journ. 1838, p. 169.

‡ Journ. 1838, p. 368. In a subsequent letter to Major WHITE, dated 15th September last, Captain HANNAY gives the following particulars regarding the manner in which the coal occurs, and how he raised it:—"The vein which I excavated is situated one and a half mile in a southeasterly direction from *Jypoor*. It lies close to the right bank of a small nulla, which winds its way into the plains and has its rise in the small hills which run along the foot of the *Naga* mountains. The bank is not steep, and for a distance of from three to four hundred yards it is tolerably straight, rising gradually from 80 to 100 feet in height from the spot where the vein is first visible: for a distance of 30 yards the direction is about 90°, when it turns to 190°, and is visible further than it has been excavated by me. Preceding onwards, however, in a direction of about 160°, and at a distance of two furlongs, you pass over a bed of greyish coloured soft shaly sandstone, strongly impregnated with petroleum, and a little further on there are several springs of this mineral oil issuing out from the description of sandstone above mentioned, and in

tain HANNAY states in this letter, that since his arrival at *Jypeor* he discovered several beds of workable coal, and having been directed to forward a few hundred maunds upon which to calculate for trial, had already commenced clearing a large vein about two miles distant. "As I wished

the open spaces the surface of the ground is covered with clay-shale and coal, well trodden down by herds of deer and elephants. A little farther on in the same direction, you come upon another rivulet, running west, and intersecting a vein of coal which is probably a continuation of the one worked by me, and it is here visible in a mass of eleven feet in height and as many in breadth. My observations on this vein did not extend farther than this, but on proceeding down the nullah, and also in the southerly direction about six furlongs distant, there are several veins of coal trending in a direction of 335° , the line of dip being 280° , and at an angle of 45° , thus dipping directly into the centre of the hillocks. I could not work on what (in miner's phrase) is termed the face of the mine, without being at considerable expense in removing such a mass of upper soil, for which I had not a sufficient number of the requisite implements, and I was consequently obliged to work directly down upon the vein, and from this circumstance, added to the tender nature of some portion of the coal, there was unavoidably a good deal of waste. The annexed sketch will perhaps shew more distinctly the situation of the vein and its accompanying strata. The method I adopted in digging was as follows. Having cleared away the surface soil, I ascertained the exact stratification of the sandstone, and having dug in the direction of the partings to the depth of 16 inches or two feet, I cut with axes to the same depth across the vein, and the blocks thus turned out, I raised by means of wedges, levers, &c. the best way I could. As might have been expected, I did not find the coal of an equally good quality throughout, at least with regard to hardness and compactness of texture, that which was uppermost being much impregnated with ochery earth, whilst under this lay the *hardest* and *finest* specimens, the blocks breaking off large, and the fracture exhibiting that beautiful iridescence said to be common in Newcastle slaty coal. Below the last-mentioned description, and as far as I dug down into the vein, *which might have been about six feet*, the coal was of a softer nature, intermixed however with many lines of hard, thus exhibiting the variety of fracture found in coal, the trapezoidal, and rhomboidal mixed in the harder with cubical fragments, and the whole exhibiting what is called by miners "bright heads," having the white shaly concretions and rusty scale visible in every fracture. The structure of the whole vein is cubical, but the outer layer of coal to the left is somewhat different from the rest, the texture of it being the same throughout, and its fracture being exactly similar to that of a slice of wood cut from the stem of a tree, and then broken in a contrary direction. It is not so thick as the other layers, and there is no intervening shale between it and the tough clay which lies upon it. This layer is also much impregnated with mineral tar, which has an aromatic odour, and in several of the masses of coal belonging to it I found a rich yellow-coloured fine clay, having the appearance of orpiment. It will be observed by the accompanying sketch, that I had no hard or rocky substance to encounter, which is a great advantage, both with regard to expense and facility in working; I only worked the coal to the extent of 15 yards in the length of the space, and six feet in depth, and although I found a good deal of ponderous slaty substance, much impregnated with pyrites, on which pick-axes struck fire, still I did not come upon rock; and to all appearance the vein of coal may extend many yards farther down. The breadth of the vein, including the partings, is about 9 feet, and the loss in digging must have been about one-third of the whole quantity excavated. On examining the beds of two small water-courses which

to collect the coal at as little expense as possible," Captain HANNAY observes, "I selected the vein nearest to *Jypoor*, and before I came to this determination, I employed myself in exploring the neighbourhood; and have been very successful in finding coal and iron in great plenty." As the sample, consisting of 224 maunds, has not been found of so good a quality as the *Assam* coal that had been previously sent down to Calcutta from the *Suffry* beds, we have annexed in the preceding note the whole of the details given by Captain HANNAY of his operations.

It would perhaps have been better, on such an occasion, if samples of different kinds had been transmitted, rather than a selection of that which from its hardness seemed to be the best; indeed it may be doubted if hardness in coal denotes a superiority, and if the circumstance, noted by Captain HANNAY, of the bed becoming somewhat softer the deeper the excavation was carried, be not a very favorable sign.

We are not however to expect that a first sample, from the outcrop we may say, of a single bed in a new and extensive coal field, should be of a first rate quality. The only fault of the sample of this coal selected by Captain HANNAY is, that it contains a considerable quantity of sulphur, which, from trials made at the mint, appears to render it unfit for annealing silver, and that 40 maunds are only equivalent to 32 maunds, of the variety of *Burdwan* coal in use at the mint at the time, for getting up steam. Captain FORBES is, however, of opinion, that this sample of *Assam* coal would be found nearly as good as *Burdwan*, when burned in the comparatively small furnaces of the boilers of steam-vessels.

As far as the *Assam* coals generally have been tried, their qualities have been found to be so good, that we may regard the small cargo transmitted to Calcutta by Captain HANNAY, as chiefly valuable in showing the facility with which the article may be raised and transported. Captain JENKINS, in enclosing the bill of expenses incurred in raising and transmitting a boatload of *Jypoor* coal to Calcutta, observes: "I need not point out to the Committee, that this attempt to work the coal beds in the neighbourhood of *Jypoor* has been made under very unfavorable circumstances; the greater part of the last dry season had passed away before Captain HANNAY was able to commence operations:

pass over the vein of coal, and which come from the summit of the hillocks, I found several beds of sandstone of the description called by the miners whitepost; it is soft, and easily broken, and was intermixed with large masses of iron ore, and soft red sandstone, and there were also two small veins of coal, which although several feet higher than the larger vein evidently appeared to belong to the same bed, having the same dip and bearing. In the beds of these water-courses, and also throughout this low hilly tract, there are found large pieces of petrified wood, round pieces of white quartz and worn fragments of mica slate, having quite the appearance of a salt mine."

indeed the rains had commenced prior to any coal being brought from the mine ; but notwithstanding this drawback Captain HANNAY succeeded in raising 1050 maunds of coal, and conveying to the mouth of the *Boree Dihing* upwards of 800 maunds, the whole expense on which amounted to 96 rupees 5 anas 6 pie : so that the coal has been brought down to the confluence of the *Boree Dihing* with the *Bramaputra* at something less than 2 anas a maund*."

Boorhath and *Jypoor*, the places at which the coal beds just noticed are situated, are laid down in the annexed sketch-map between No. 3 and No. 2 ; the advantages of the former beds over the latter in regard to situation may also be seen on this map, the *Jypoor* river joining the *Bramaputra* 18 miles higher in *Assam* than the river on which the *Boorhath* coal would have to be carried. Besides this, the *Jypoor* coal is situated from $1\frac{1}{2}$ to 3 miles from water-carriage, while boats may approach at *Boorhath* to the mines. Nevertheless, these differences are so slight, that a preference to one or other locality must depend on its comparative healthiness, on the quality of the coal, and on the general capabilities of the place.

Of the healthiness of *Assam* generally people now begin to form very favourable notions compared with Bengal ; and *Boorhath* and *Jypoor* are said to be situated in one of the finest quarters of the province. In the present state of things, perhaps, the *Boorhath* and *Jypoor* coals are only to be regarded as the elements of local improvement ; the intercourse between *Upper Assam* and other parts of India must assume a better footing, before its coals could be supplied to Calcutta at a cheaper rate than Bengal coals, but whether the former might not compete with the *Bardwan* coal in the supply of the depôts on the Ganges, unless the present prices of the latter can be considerably reduced, and whether it would not be advisable, considering the local improvement to which such an arrangement would give rise, to adopt measures for supplying the Gangetic steamers from this quarter, even though no direct saving were at first to be expected, may deserve consideration. Such a question, it is not perhaps the business of the Committee to examine into ; still it is one of so much importance, and so intimately connected with the practical results of its proceedings, that we may be pardoned for alluding to it in detail.

* In concluding this letter Captain JENKINS observes,—“It gives me much pleasure to bring to the notice of Government through the Committee, the zealous manner in which Captain HANNAY, at considerable risk and trouble, has co-operated with me, not only in this instance, but in every other, where an attempt has been made to develop the resources of the eastern districts of *Assam*.”

The rates at which the following stations are supplied under the present contracts, which will expire on the 26th of July next, are as follows :

| | | | |
|----------------|-----------------------|---------------|-------------------|
| Cutwa,..... | Ra. 55 8 per 100 mds. | Colgong, ... | 70 0 per 100 mds. |
| Berhampoor,... | 56 0 ditto. | Rajmehal, ... | 67 0 ditto. |
| Kulna, | 54 0 ditto. | Mongeer, ... | 74 0 ditto. |
| Commercolly, | 64 0 ditto. | Danapoer,... | 80 0 ditto. |
| Surdah,..... | 70 0 ditto. | | |

Average, Rs. 67-7-6, or 654 rupees 11 annas per 1000 maunds*. But as the *Bhagirutty* and *Sunderbux* courses are only used alternately by the regular steamers, the quantity of coal consumed annually at the four first depôts, can only be equivalent to the quantity consumed at two of the others, the true average price of the coal consumed will therefore be Rs. 67-13-2, per 100, or 678 rupees 13 annas 8 pie per 1000 maunds. Considering the proximity of the two first depôts, *Cutwa* and *Berhampoor*, to the *Adji* and *Rajmehal* coals, and the *Kulna* and *Commercolly* depôts to *Sylhet*, the most economical arrangements, that could be made for their supply, would certainly be with persons connected with the mines in each of those districts, who might be requested either to furnish tenders, or to make such other arrangements, by way of experiment, as might seem most sufficient, for securing so small a supply as that required on the *Bhagarutty* and *Sunderbux* lines†.

* Note by Captain JOHNSTON. These charges include the landing, storing and delivering the coal from the depôts to the steamers, and all loss by defalcation or other causes. The contractors are not paid for the quantity of coal they dispatch, but only for that which they deliver, free from dust and small coal, on board the steam-vessels.

† Mr. LEWIN of *Cherra Poonji* offers to deliver coal into boats at five per cent. on the cost of doing so, and Mr. GEORGE LOCH, collector of *Sylhet*, who communicated Mr. LEWIN's offer to the committee, proposes himself to find boats for the transmission of the coal to any depôt at which it may be required, and thinks the service which this would confer on the district would induce any collector at *Sylhet*, should he be removed, to do the same. See on this point the report annexed to this article.

Regarding the *Adji* coals Mr. ERSKINE observes in a letter, dated 6th November, 1838, to the coal committee : " It would be impossible to say how much coal might be got down to *Cutwa* during an average season, and it would be equally rash to give a tender for the supply of a stated quantity, or to depend on such a contract, till the navigation of the *Adji* had been put to the test of experiment." In another part of the same letter Mr. ERSKINE remarks that, " Government could not depend on a larger supply than 10,000 maunds in one season, till the navigation of the *Adji* had been tried," and then states that " if 40 rupees per 100 maunds could be offered for the *Shoergurk*" (which is the best *Adji*) " coal, a much larger supply might be brought to *Cutwa* than that abovementioned, by employing carts to bring down the coal to the lower *Adji ghats* during the dry season, making the carriage from thence in boats less precarious." Mr. ERSKINE adds, that he should be happy himself to

This would leave the higher stations to be supplied on a separate contract from *Bardwan*, or any other source from which it might be done cheapest. The average charge for coal at the five depôts from *Surdah* to *Danapoor* is at present 72 rupees 3 anas per 100, or 721 rupees 14 anas per 1000 maunds.

The entire consumption for the past year has been about 91,000 maunds, on the whole line from *Calcutta* to *Allahabad*, but should the number of steamers be increased, the expenditure of coal must also increase in the same proportion, and the supply would in such case become, in every sense, an object of more importance.

Boats of any draught would have a favourable current throughout the year from *Disung Mookh* on the *Bramaputra* to *Surdah*, with the exception, during the dry season, of about 80 miles from *Jafirgunj* to *Surdah*, they would thus be enabled to reach *Surdah*, one of the depôts for coal, in about one month, or say, six weeks from the date of leaving the *Disung* river. Returning unladen for fresh cargoes, they would be about two months, thus making three trips in the year with the greatest ease, inclusive of the time required for taking in and discharging cargo.

The following are the rates at which boats are hired by the commissariat for the conveyance of public stores, and, though higher perhaps than those which merchants pay, may be taken as established charges, at which any extent of tonnage may be had. The boats required for this duty should each carry at least 1000 maunds*.

| | |
|---|--------|
| Hire of boat, at three rupees per 100-maunds burden, per mensem,..... | Rs. 30 |
| 1 mangy, at 5 rupees per mensem,..... | 5 |
| 15 boatmen, at 4 rupees each, | 60 |

95

undertake the delivery of coals at *Cuttack* for a year, by way of trial, should no one else offer to do it on more favourable terms. The *Rajmahal* coal discovered by Mr. FERRER, will, that gentleman thinks, cost at *Berhampoor* about six anas per maund; but further particulars require to be known regarding it, before any reliance could be placed on receiving supplies from this bed.

* Note by Captain JENNISON.

"I believe this is for the measurement of the boat; a boat of 1000 maunds will not carry more than 6 or 700 maunds weight." The weight which boats may carry depends a good deal on rivers and seasons. In March and October it might be necessary to load boats lightly, but at other periods coal boats from *Assam* might be laden if necessary to within six inches of the water, having such fine rivers to navigate; but if a 1000-maund boat be too small, a 1400-maund boat might be employed instead, with the same number of men, which would make a trifling difference in expense, but would give a great advantage in the results.

or 1,140 rupees per annum, to which must be added insurance, which to *Gowahutta* is $3\frac{1}{2}$ per cent. and there is nothing in the navigation of the *Bramaputra* for 200 miles above *Gowahutta* to increase the risk beyond that of an equal distance on the *Ganges*; insurance would therefore be on three trips 52 rupees eight anas, which added to the annual cost of the boat and men, gives 1192 rupees eight anas. To this sum must also be added the original cost of raising and conveying the coal from the pits to the *Bramaputra*, this according to Captain HANNAY's experiment is two anas per maund, which for 3000 maunds would be 375 rupees, making in all for 3000 maunds of coal delivered on any part of the *Ganges*, from which three trips might be annually made to *Assam*, 1537 rupees 8 anas, or 512 rupees 8 anas per 1000 maunds, being 209 rupees 6 anas less than the rate at which the depôts from *Surdah* to *Danapoor* are now supplied*.

* Major HENDERSON remarks, that the calculation here entered into does not provide for incidental expenses, including *clashies'* establishments, wastage, landing charges, custody, all which would somewhat increase the expense, though not very considerably: Captain JOHNSTON therefore makes it out as follows:

| | |
|--|------------|
| Boat hire of 3000 maunds of coal, as per above statement,..... | Ra. 1148 0 |
| Cost of 3000 maunds of coal, at two anas per maund,..... | 375 0 |
| Insurance, at three per cent., | 45 0 |
| Loss on coal by two removals and twelve months storing, 300 maunds. | |
| Landing charge on 3000 maunds, | 22 8 |
| Reloading and delivering 2700 maunds, at one rupee per 100 maunds, | 27 0 |
| Sirkar and peons' wages for twelve months, seven and five rupees,..... | 144 0 |
| Ground rent and expense of shed, at six rupees per mensem, | 72 0 |

Total cost of 2700 maunds of coal delivered to steam boat, .. 1825 8 or ten anas nine pie per maund nearly. This calculation, which certainly omits nothing that could be necessary, while other things are probably overrated, still leaves an advantage of one ana three pie per maund, in favor of the rate at which *Assam* coal might be supplied to the station, from *Surdah* to *Danapoor*, compared with that now paid by the government for *Bardwan* coal for those stations.

The loss on coal by moving it from place to place varies according to the nature of the coal and the number of removals; the latter cause would be at its minimum in the *Assam* coal, as the same boat that would take it up in *Assam*, could deliver it at the depôt for which it might be intended, and where it is not necessary it should remain a year in store. A sirdar and peon moreover would not be necessary for every 2700 maunds of coal, but for all at the depôt, which might be 20,000 maunds; the boatmen would be responsible for the coal on board their own boat, and, being measured out and into the boat, there would be no room for cheating. It is also too much to charge the entire expense of a shed to 2700 maunds, when the same shed would answer for all the coal required at the depôt. Both statements however show that the *Jypoor* and *Boorhath* coals might be introduced to the higher stations on the *Ganges* with considerable advantage; and if free passage to emigrants were offered in the return boats, with the prospect of employment, the present paucity of labourers in *Assam* would soon be remedied.

Perhaps the most important results from opening coal mines in Assam for the supply of Gangetic steamers, until more convenient sources should become better known than at present, would consist in the assurance of an unlimited and steady supply at all seasons, and the widening of the field for competition, while the attention of natives being directed to a new and promising branch of trade, the measure would contribute largely to the local improvement of the province.

To the above account of the coal fields of Assam it may be useful to add some further information collected by the committee in respect to the coal of Cherrapoonjee and other parts of the hills north of Sylhet, and likewise respecting the coal field on the Kosla nulla near the Soan river in Behar. The information in respect to the former mines is in the shape of replies obtained from Mr. G. LOCK, the deputy collector of Sylhet, to queries addressed to him by the committee for the purpose of ascertaining the possibility of turning the coal of that district to account in steam navigation: and similar queries were addressed to the Engineer of the steam service, Mr. TYTLER, at Danapur, in order to ascertain the same points in respect to the Soan and Kosla coal field. The queries and the replies are given as they were received.

I. *Sylhet coal*, G. LOCK, Esq. B. C. S. Deputy Collector, Sylhet.

1st. "How many situations are there in your neighbourhood at which good coal is known to be raised, and what is the distance of the mines from the nearest navigable rivers?"

1st. There are three, Cherrapoonjee, Sirarssem, and Lour. The coal of the last mentioned place is inferior to the Bardwan, but the vein is close to a small river navigable for dingees during the rains. Cherri is eleven miles from Pandua, to which place boats of 500 maunds can proceed during the rains; but it is necessary to bring the coal from Terriah-ghat at the foot of the hills to Pandua in dingees, a distance of four miles. The Sirarssem vein has never been worked, and is farther in the interior of the hills, four or five miles from Cherri.

2nd. "What are the situations at which depôts might be most conveniently established? for what period would these depôts respec-

tively be accessible for ordinary boats of a certain size? would any particular boat be desirable and what is the probable expense per maund of delivering the coal at the nearest depôt accessible to large boats?"

2nd. *Chattuk*, on the river *Soorma* near the mouth of the small river which runs past *Pandua*, is best situated for a depôt, and is approachable at all times of the year by the common country boats of 500 maunds, which it will be best to employ for conveying the coal. The price of coal is likely to vary at *Cherra* from 20 to 22 rupees per 100 maunds; and as it will be safer to calculate upon the higher price the following will be the average cost of delivering at *Chattuk*.

| | |
|--|--------|
| 100,000 maunds of coal at 22 rupees per 100 maunds, Co.'s Rs. | 22,000 |
| A salary, of three per cent. on the price, to the contractor or agent at <i>Cherra</i> , | 600 |
| Expense of building a depôt for the coal, | 200 |
| Conveying coal from <i>Soorma-ghat</i> to <i>Chattuk</i> , at two rupees per 100 maunds, | 2000 |
| | <hr/> |
| | 24,800 |

Thus the rate of delivery at *Chattuk* would be three anas eleven pie or four anas per maund. I annex a statement showing the expense of conveying, and the price of delivering the coal, at the several stations mentioned in your letter.

3rd. "Are any parties now working the coal mines in your vicinity, and what is your opinion as to the best mode of proposing for tenders, or otherwise providing for the future supply of coal for river steamers from mines in your neighbourhood, and what your opinion generally as to the best way of bringing such coal into use after July next, when the present contracts will expire?"

3rd. The *Kasyas* are the sole workers of the *Cherra* vein. That of *Lour* was worked for a short time by Mr. G. INGLIS of *Chattuk*; but the coal being inferior could not compete with the *Bardwan* in the market, and he gave up the attempt. No contracts can be made with the *Kasyas* for a continued supply of coal, for without some one to look after them, and to see their engagements fulfilled, they would never have the coal at the foot of the hills, in sufficient time. Each supply ought to be bargained for on the spot, and I would recommend, as mentioned in my letter to you of August last, that an officer be appointed to contract with the *Kasyas* for the necessary supplies, and that he should receive

as a salary, either three per cent. on the price of the coal, or what will be better fifty rupees per mensem. His business would be to see that the coal was brought to the foot of the hills, and to report when the required quantity was ready for despatch. The detail of the business can easily be settled by us, should this arrangement meet your committee's approbation, and the sanction of government. That some such arrangement is necessary is obvious, for it would be impossible for me to leave my station and present duties, to go to *Cherra* to make contracts, whenever a new supply of coal was required, which could not even then be procured without constant supervision. I was assisted by the kindness of a friend at *Cherra* when I made the last successful experiment, and I wrote to a gentleman settled at *Cherra* on my return from Calcutta, begging to know whether he would agree to the following terms. To purchase the required supplies of coal, and to receive a percentage on the price or fifty rupees a month. To find the purchase money himself, and not to require repayment till the whole supply had been delivered at the foot of the hills, leaving the coal to be forwarded to its various destinations by the collector of *Sylhet*, or any other officer who might be authorized, for his own health would not permit him to come down to the plains. He stated in reply his inability to find the purchase money, but he is willing to take upon himself the task of forwarding the coal, and as he has been resident some time in the hills, he is likely to get it as cheap as any one else. The great object is to have some one to look after the *Kasyas*; the money might be supplied from the *Sylhet* treasury, and as long as I remain in the district, I shall be happy to use my best endeavours in forwarding the coal to any place, and assisting the views of the committee.

It will now be a difficult thing, and attended with greater expense to have the coal ready at the different stations, particularly at those above *Mongir* and *Danapur*, by next July. *Allahabad* is about two and a half or three months' journey from this, and it will take some time in getting the coal to the foot of the hills;—there is now but little water in the small river that runs by *Terriah-ghat*, and the coal would have to be carried in canoes to *Pandua* and thence to *Chattuk*. These canoes are cut out of a single tree, and not capable of carrying more than twenty or thirty maunds; without money I can do nothing, and unless I have orders to draw on the collector of *Sylhet* for the necessary sum immediately, another month may be lost. I will, however, make the attempt, and accompanying is a statement showing what would be the probable expense.

The stations lower down the river than *Colgong* and *Rajmehal* can be supplied in time, when the rains commence in April next, if the coal is now brought down.

4th. "Your opinion is also solicited as to the most convenient locality for establishing a general depôt for the supply of the following stations from coal mines in your vicinity, with a view to facility and economy in procuring boats. *Cutwa, Berhampur, Kulna, Commercolly, Sardah, Colgong, Rajmehal, Mongir, Danapur, Ghasipur, Mirzapur, Allahabad.*"

4th. If a depôt is to be established on the *Ganges*, the committee will be the best judges of its locality. It would be convenient to have one at some central station, or where boats might be easily procured, to which coals from *Chattuk* might be sent according to the annual demand. The cost of carrying coal from *Sylhet* will then be fixed, and the price of delivery will not vary very much, depending of course on the rate at which it can be procured at *Cherra*, which at present varies from twenty to twenty-two rupees per 100 maunds. But it will be necessary to consider whether the cost of carriage from the central depôt to the various stations will not increase the price of the coal more than if sent direct from *Sylhet*; of this I am no judge, not knowing what is the expense of water-carriage on the *Ganges*. From the accompanying statements the committee will be able to decide, which is the cheapest method of forwarding the coal, and if I have not allowed sufficient time for a journey to and from the various stations, calculating from Calcutta, the error can easily be remedied by allowing another month's boat-hire.

Rs.

Price of 100,000 mds. at 22 Rs. { 22,000
per 100 maunds..... }
Salary to local agent at 50 Rs. { 500
per mensem..... }
Expense of conveying the coal { 2,000
from Terrah-ghat to Pandua, }
Expense of building a depot, { 200

24,800

Rs.

Price of one 600-maund boat for 1 month } 18
at 3 Rs. per 100 maunds..... }
1 Manjy at 4 Rs. 4
6 Dandies at 3 Rs. each, 18
40

*Statement of the probable cost
of Sylhet coal at the different
Depôts.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | I have distributed the coal to the various stations in these propositions, in order to give some idea of the expense of purchasing & forwarding it. The Committee will of course give the instructions regarding the quantity of coal required at each station. |
|--|------------------------------|----------------------------|------------------|---|---|---|--------------------------|----------------------------------|-----------------------------|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| Station to which coal is to be despatched. | Distance from and to Sylhet. | Quantity of coal required. | Boat of 600 mds. | Price of coal per maund on delivery at Chat-tuck depôt. | Total price of coal at Chat-tuck depôt. | Expense of cartage to various stations. | Total of cartages 6 & 7. | Rate for 100 maunds on delivery. | Rate per maund on delivery. | |
| | | | | | | | | | | |
| | months. | days. | No. | men. | | | | R. A. P. | R. A. P. | |
| Cutwa, | 1 | 15 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 5 10 |
| Berhampore, | 1 | 15 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 5 10 |
| Kulash, | 1 | 15 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 5 10 |
| Commercolly, | 2 | 0 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 6 6 |
| Sardah, | 2 | 0 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 6 6 |
| Colgoog, | 3 | 0 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 6 6 |
| Rajmehal, | 3 | 0 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 6 6 |
| Mongyr, | 3 | 0 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 7 9 |
| Dinapore, | 3 | 0 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 7 9 |
| Chareepore, | 4 | 0 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 9 1 |
| Mirzapore, | 4 | 0 | 16 | 112 | 4 | 1984 | 0 | 0 | 0 | 9 1 |
| Alhabad, | 5 | 0 | 24 | 168 | 4 | 3976 | 0 | 0 | 0 | 15 6 |

G. LOCH, *Depy. Collector.*

II. *Soan and Kosi coal field.* W. B. TYTLER, *Superintending Steam Engineer at Danapur.*

1st. "How many situations are there in your vicinity, at which good coal might be raised, and what the distance of the mines from the nearest navigable rivers?"

1st. The coal with which I am acquainted is situated on the *Soan* river, between *Raktas Gurh* and *Palámow*, and might be advantageously raised near *Surdra* on the *Amanath* river; another good situation will also be found at *Hatar*, where the coal is of a very fine bituminous quality, equal to any I have examined in this country.

2nd. "What are the situations at which depôts might be most conveniently established? for what period will these depôts be respectively accessible for ordinary boats of a certain size? whether is any peculiar form of boat desirable or necessary, and what is the probable expense per maund of delivering the coal at the nearest depôt accessible to large boats?"

2nd. I would propose *Seebpur* as a general depôt, situated at the junction of the *Soan* with the *Ganges*, near *Danapur*; it will be found a central and convenient spot, accessible to large boats at all seasons of the year. I would also propose to establish another depôt at *Ghane-ghat*, where large boats would be obstructed from passing up the *Soan* during the months of October, November, December, January, February, March, April, May, and June.

From *Ghane-ghat* downwards to *Seebpur*, boats of about 500 maunds might ply throughout the year, but above that point smaller size boats would be desirable, owing to the shallowness of the river. In my opinion square punts or lighters, similar to those employed on the Thames for conveying coal, would be of great use, as the quantity of coals they would convey would be greater than that of any other craft known in this country. The expense I estimate the coal at after it has been laid down at *Seebpur*, would be six to eight anas per maund.

3rd. "Whether any parties are now engaged in working coal mines in your neighbourhood? and what is your opinion as to the best mode of proposing for tenders, or otherwise rendering the coal in your vicinity available for river steamers?"

3rd. I am not aware of any of the mines having been as yet opened by any other person than Captain SAGE, the executive officer of *Danapur*, who some years ago brought from 12 to 1600 maunds to this station for brick burning, &c. &c., and he speaks very highly of the quality. I am of opinion that any mode of inviting public competition for a

supply of coals from mines not yet in operation, would not be found to answer so well, as by the government giving in the first instance a grant of land wherever the mines are situated, and by afterwards making advances on a private contract, to the parties holding the grant, for a permanent supply of the coal to the depôts, where it would be desirable to lay it down for the use of the river steamers.

4th. "The committee would feel much obliged by your answering these questions at your early convenience, and favouring them with your opinions generally as to the best and most economical way of introducing any coal with which you may be acquainted in the neighbourhood of *Danapur*."

4th. In the first instance we have to take into consideration all the obstacles to the undertaking in view; in the second, the best means of overcoming such obstacles, should they exist. As to the practicability of procuring coal from the beds in the *Palamow* district, I have never entertained any doubt; but whether we may be able to produce the article of the quality and in the quantity required, we are not certain: although the whole mass of information, to which I have access, would tend to confirm the opinion, that the mines will not only be productive, but will require but little excavating of soil, and clearing, in raising the coal to the surface.

Until operations have commenced, and have been continued for some time, it would be rash to dwell too much on such a doubtful subject as mining is well known to be, but as to the natural advantages, and facility of communication either by land or water, we can speak with more certainty: a few most important points must be kept in view to ensure success. First, the quality of the coal on the surface cannot always be allowed to point out the best spot to open; and second, an elevated point of the beds must be sought for the obvious advantage of running off waste water; third, a spot as near the deepest navigable river as possible, will be an important consideration; and, lastly, a spot combining as many of these advantages, together with a thick stratum of coal to work on, where a mine is opened, will also require to be attended to.

As to the navigation of the *Soan* river, I do not apprehend any great difficulty, except in very dry seasons; and to obviate this a great quantity of coals ought always to be kept in store at the general depôt. We should require to use boats of a size proportionate to the depth of the water found in the rivers, and to be regulated in all the arrangements, as economy may dictate from time to time.

V.—Ancient Inscriptions.

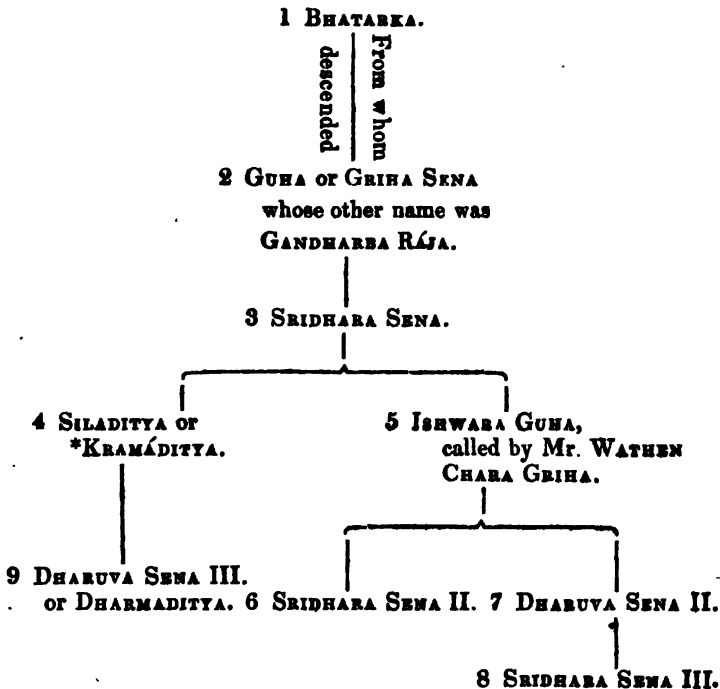
Dr. A. BURNS' *Kaira Tamba-patra*, No. 1.

When we gave, in the past month, a translation of No. 4, of the *Tamba-patras*, of which transcripts and facsimiles were obtained from Dr. A. BURNS of *Kaira*, we were not aware that one of the same precise description had previously been communicated by Mr. Secretary WATHEN, and was printed with an exact copy of the plate in the number of this Journal for September, 1835. We were led to refer to that article by finding in the oldest of Dr. BURNS' grants, that marked No. 1, by him, the name of SILADITYA, and other princes of the Valabhi race from SENAPATI BHATARKA downwards.

Our present grant confirms the order of the reigns given by Mr. WATHEN from his *Tamba-patras*, and affords additional dates and circumstances, of high interest to those who occupy themselves with such studies. Mr. WATHEN's order of the Valabhi or Balhara dynasty is as follows :

| WATHEN. | BURNS' Grant. | | WATHEN. | BURNS' Grant. | |
|---------|---------------|--------------------|---------|---------------|-----------------------------------|
| 1 | 1 | BHATARKA SENAPATI. | 8 | 4 | SILADITYA, I. |
| 2 | | DHARA SENA. | 9 | 5 | CHARA GRHA, or ISH-
WARA GUHA. |
| 3 | | DRONA SINHA. | 10 | 6 | SRIDHARA SENA, II. |
| 4 | | DHARUVA SENA, I. | 11 | 7 | DHARUVA SENA, II. |
| 5 | | DHARA PATTAR. | 12 | 8 | SRIDHARA SENA, III. |
| 6 | 2 | GUHA OF GRHA SENA. | 9 | | DHARUVA SENA, III. |
| 7 | 3 | SRIDHARA SENA, I. | 13 | | SILADITYA, II. |

Of these rajas, the four following BHATARKA are omitted in the present grant, it being simply stated that from BHATARKA, the founder of the family, was sprung GUHA SENA or GRIHA SENA, the former is our reading. From this prince however we have the genealogy complete, and with the simple introduction of DHARUVA SENA, III, our ninth in order, and the author of this grant, the series corresponds with that of Mr. WATHEN in every particular. The genealogical tree which our present grant enables us to frame from GUHA OR GRIHA SENA will stand as follows :



Now the first thing to be observed is, that the grant translated by Mr. WATHEN purports to be by SRIDHARA SENA ; that we now present is by DHARUVA SENA, the sixth in succession after him ; of course therefore Mr. WATHEN's is the most ancient ; but though there were six successions to the gadi, these must have been of less than the ordinary duration, for the minister who prepared the grant in SRIDHARA SENA's reign was SKANNA BHATTA ; whereas the minister who prepared the present grant is named as MADANA HILA, son of SKANNA BHATTA ; thirty or forty years will therefore be the probable interval occupied by the reigns of all the princes, named as having intervened between SRIDHARA SENA the first, and DHARUVA SENA the third.

Another important fact results from the date of our present grant, which is clearly 365 Sumbut, and which must be the Sumbut of VIKRAMĀDITYA ; corresponding with A. D. 309 ; but Mr. WATHEN assigns to SRIDHARA SENA, DHARUVA SENA's grandfather, the date A. D. 328 or 384 Sumbut. He has been led to this conclusion by supposing the words $\text{N}\text{N}\text{Ṭ}$, which he reads " Sumbut" with the figure " 9," to have reference to the Valabhi æra, ascertained by Col. TODD to have commenced in

* Perhaps VIKRAMA'DITYA but the Vi is wanting in the transcripts.

A. D. 319. But there is no word whatsoever in the grant to warrant a reference of this Sumbut to that æra, and it seems much more natural to suppose the Sumbut, or year, to be either the Sumbut of VIKRAMADITYA with the figures effaced, or merely to have reference to the year of SRIDHARA SENA's accession. If the figure which follows the word Sumbut be indeed a 9, (it is not very plain) there is nothing to prevent the year of the reign of that sovereign being indicated thereby, as has been usual with many rājas, and as was practised even by rāja KISHEN CHUND of *Nudea* within the last sixty years. Assuming therefore thirty years for the interval of the son's succeeding SKANNA BHATTA as minister, the proper date of Mr. WATHEN's Tamba-patra, will be 279 A. D. and that of SRIDHARA SENA's accession 270 A. D. The date upon Dr. A. BURNS' grant, examined from the facsimiles taken off in printing ink, is clear, so as to admit of no doubt of the figures, or of its being the Sumbut of VIKRAMADITYA that is referred to*.

The translation of this Tamba-patra is given entire, and nearly literal, from a transcript made by Mr. JAMES PRINSEP, the pandit KAMALAKANTA, aided by the Sanskrit College student SÁRODAPROSÁN, having rendered it for us into English.

The character of the original exactly corresponds with that of Mr. WATHEN's grant, of which a facsimile has been already published, so that we are saved the necessity of having a separate plate prepared to exhibit it.

†१ स्वस्ति विजयिष्यत्तचरितार्थात् वीरासनप्रसभप्रखतामित्रात् मि
त्राखामतुल्यवत्सम्पन्नमदलाभसंसक्तप्रविधिपरत्नप्रतापात् प्रतापोपव
तदानमार्जवोषा ॥ ३ ॥ जितानुरागादनुगतमौखोभूतश्रेष्ठिविद्यावान्
राज्यश्रियः परमनादेश्वरभटार्षादादित्यवङ्गानो राजवर्षादजनि माता
पितृचरवगखेन्दुघोरविप्रविधौताश्रेष्ठकण्ठः ॥ ३ ॥ मानवर्षादिविद्या

* Since the above was sent to press, a letter has reached Calcutta from Mr. WATHEN at the *Cape of Good Hope*, dated 16th October last, which, after expressing great interest in the discoveries made from the Asoka inscriptions, concludes as follows: "My impression was, before I left India, that I mistook the Sumbut in the Gujrat Inscriptions, and that it is that of VIKRAMADITYA." This singularly confirms the conclusion we had come to, from comparison of the date in this No. 1. grant of Dr. BURNS; and would seem to show that the year of the grant of SRIDHARA SENA, translated by Mr. WATHEN, was in his opinion erased, and that the imperfect figures in the plate are not to be read as the figure 9.

† The numbers indicate the lines of the copper plate.

द्वितीयः बाल्यवैकश्ररखवरगजघटास्थावनप्रकाशितसत्त्वनिचयप्रताप
 यजीतारातिदत्तरत्नप्रतापसदुपादानधनसंहतिः सक्कल । ३ । शिवि
 यजीतमार्गपक्षपरिपाकनप्रजासुहृत्प्रकाशगन्धर्वराजशब्दाभिधेयः सत्त्वस
 म्भावबुद्धयपत्तिः स्वरशशाङ्गाधिकराजदतिशुद्धवाक्प्रती । ५ ।
 प्रापयनः श्रद्धाग्रताभयप्रदानपरतया ढववदपास्तविषयव्यापारोऽर्थाय
 नाधिकधनप्रदानानन्दितसुहृत्प्रजाहृदयः सदाचारादिसक्कलादेश ।
 ६ । भागप्रमेयः परममाहेन्दरः श्रीगुहसेनः तस्य सुतस्तत्पादनसमयूख
 सन्ताननिःकृतजात्रवीजौघप्रकाशिताश्रेवकल्पवः प्रवतिश्रतशहो ।
 ७ । यजीत्त्वमानसंघप्रजोभादिवाञ्छितः सरभसमाभिगामिभैर्गुणैः
 सहजशक्तिशिक्षाविशेषविस्मयितविश्वधनुर्धरः प्रथमनरपतिसमेति
 श्रिष्टागामनुपाकयिता । ८ । यागधर्मदयानामपाकहं प्रजापचात
 कारिबामुपवृत्तानां दक्षयिता कक्षीसरस्वत्योरेकाधिवासः संहताराति
 यक्षकक्षपरिभेददक्षविक्रमो । ९ । विक्रमोपसंप्राप्तविमलपार्थिवश्रीः
 परममाहेन्दरः श्रीधरसेनस्तस्य सुतस्तत्पादानुध्यातः सक्कलजगदानन्द
 नात्यद्भुतगुणसम्पदुदयशशिमयशः । १० । संवृतदिक्पञ्चकः समरश्रत
 विजयशोभनयशोमखकांसुद्युतिभासुरावोधिजनगुहमनोरथमहाभारः
 सर्वविद्यापरापदविभागा । ११ । भिगमविमलमतिरपि सर्वन्तः
 सुभासितभुवनोपि सुखोपपादनीयपरितोषः समस्तलोकभोगगामि
 हृदयोपि सुचरितातिशयसुखात्मा । १२ । परमकल्याणसभावश्रीवः
 भूतस्ततयुगन्धपतिपथविशोधनोदयकीर्तिः धर्मानुपरोधोऽज्ज्वलतरङ्गता
 र्यसुखसम्पदुपसेवानिच्छः । १३ । [वि]क्रमादित्यद्वितीयनामा श्रीश्रीश्री
 दिक्कल्याणानुजस्तत्पादानुध्यातः स्वयमुपेन्द्रगुहसेन गुहकाव्यादरवता
 समभिनक्षत्रीया । १४ । राजलक्ष्मीः स्वन्वाश्रिता परमभक्तसेनधुर्ध्व
 कदाचासम्पादनैक परतयैवोदगतखेदः सुखरतिसुमनाधितसत्त्वसम्पत्तिः
 प्रभावसम्पदश्रोतव्य । १५ । पतिश्रतशिरोरत्नकायोपगूढपादपीठोपि
 यरावन्नाभिधानरसानाणिङ्गितमनोवृत्तिः प्रवतिसेनां परित्यज्य
 प्रज्ञातपौत्रवाभिमानैरप्य । १६ । रातिभिरनासादितप्रतिक्रियोपा-

वःस्तमिच्छिष्यभुषणामोदविमलमुखसंहतिप्रसभविद्युतिसकलकचिविव
 सितमतिः नीचजनाधिरोहि । १७ । भिरजेवैर्दौघैरनाम्युत्तमदुःख
 प्रसूतपौत्रवाक्पौत्रजातिप्रवचनातिविषयकक्षितिपतिपक्षीप्रवायः
 हप्रकाशितम् । १८ । वीरपुत्रः प्रथमसंस्थाविजयः परममाहेन्दरः
 श्रीधरगुह्यस्तनयस्तत्पादानुध्यातः सत्त्वविद्याधिममविजितमिच्छि
 कविदम्बनमनः । १९ । परितोषातिप्रवसतसम्पदाद्याजौदार्येण च
 निम्नतानुसन्धानसमाहृतविषयमनोरथकोभयः सत्त्वमुपय । २० ।
 क्षितानेकप्राज्ञकपालोक्तचरितमभीरभाषेयि परमभद्रप्रकृतिर
 क्षयिमप्रयवविनयमोमाविभुषणः समरप्रतयव । २१ । पञ्चिबको
 दक्षप्रबकोदयप्रदस्त्वविष्ण्वितनिच्छिपप्रतिपक्षदर्पोदवः सधनुःप्रभाव
 परिभूताक्षपौत्राभिभावसक्त । २२ । कष्टपतिमन्त्रणाभिवन्दित
 प्रासवः परममाहेन्दरः श्रीधरसेनस्तानुजस्तत्पादानुध्यातः सत्त्वविद्या
 तिप्रवितसक्तपूज्यम् । २३ । रघुतिरतिदुःखाश्रानामपि साधविद्या
 विववाद्या मूर्तिमानिव पुत्रवकारः परिवृज्जाङ्गुयानुराघनिर्भरचित्त
 वृत्तिभिर्नगुरिव । २४ । सधमभुपयज्ञः प्रकृतिभिर्दक्षितकक्षाकचाव
 क्षान्तिमात्रिवृत्तिहेतुरक्तज्ञकुमुदवाद्यप्रभः प्रतापस्थमितदिगन्तराच
 प्र । २५ । शंसितप्राप्तराश्रितः समतोदितः सविता प्रकृतिभ्यः परंप्रसव
 मर्थवन्तमतिवक्तुविधप्रयोजनानुवन्धमाधनपरिपूर्णे विदधत् । २६ ।
 सन्धिवियहसमासनिचयविपुलः क्षानुगुह्यमादेशस्तत् गुह्यमङ्गिः शिष्य
 वजनितसंसार साधुताराव्यशाकामरीयक्षत्राययो । २७ । वभगोर
 पिनिष्ठातः प्रकृतविजयोपि कस्त्याम्यदुःखदयः श्रुतवागव्यधर्मविज्ञानो
 पि प्रवृत्तिस्थिरसौहृदयोपि निरसितरिपुवर्माणा । २८ । मुदय
 समयसमुपजनितजनतानुरागपरिपिहितभुवनसमर्थितः प्रवितवाणा
 दिव्यद्वितीयगामा परममाहेन्दरः श्रीधुवसेनः । २९ । वस्त्र सुतस्तम्
 दादक्षमणप्रज्ञामधरशिक्षवज्जनितविज्जनाम्बनकाटचन्द्रप्रकाशः शशि
 भावपुम्बवज्जनितमौलिकामाणांशुरव्य । ३० । नामकश्रुतविज्ञेयं
 प्रदागसन्धिविज्ञातविद्यहस्तविन्द्याय इव मृदुकरयहवादनदी

निपुणः तानि देवप्रसादेयानि तेषामतिसरस्वमनःप्रीतिं विस्तारयन्
 सज्जनयनानुदिनपरिमुदितचिभुवनाभिनन्दितात्मौक्तिकधनधर्मध
 य । ४५ । विसृजितप्रकीर्णकणिष्कवर्गैर्देवदिग्गुरुन् प्रति यथाहं
 मनवरतप्रवरतरमहाप्रसादिदानवसगानुपजातसन्तोषोपात्तपरकीर्तिं
 भंक्तिपरम्परादन्तुरितदिक् । ४६ । चक्रवाकः स्वचेष्टयैव यथार्थधर्मादि
 व्यापरनामा श्रीश्वरमुहुरायाजन्मनस्तदस्य श्रीविक्राश्रित्या कथावत
 श्रितिकथेव कीर्त्ता । ४७ । धनसकलदिक्पल्लवस्य खड्गितामुच्यते
 पनपिच्छशामविन्ध्यैवविपुलपयोधरराजशिवः क्षौड्योपतेः श्रीश्रीवादि
 त्स्य स्रुगुर्वप्रखयकीर्त्तियोषाप्रतिदिनसन्मर्जमानककाचक्रवाकः केस
 रीन्द्रशिभुरिव राजलक्ष्मीमयवमख्यकीर्तिवाक्शृङ्गाः शिशुख्येन
 इव वचिमचूडामयिः प्रचक्षत्रप्रभावश्च श्ररदाग्रम इव प्रताप
 प्रफुल्लसङ्गतपद्मविभोषितारिपङ्कजः विजयप्रभोधरागिव परम्परा
 उदयप्रवतपनप्रतापातपोचनकसम्भःसमापयन्नभिमुत्तानामार्गं दि
 यतां परममाहेश्वरः श्रीश्रीवादित्यः कुशकीर्त्तानेव समाप्तापयत्येवम
 क्षुवाविदितं यथामया मातापित्रोःपुण्याप्यायनाय त्रिरिभिर्भरविनिर्जत
 खेटकवादंक्षुधितचातुर्भिःसुमान्यतापसगात्रसत्रसाधारित्राक्षय सान्द
 पुत्रत्राक्षयनाधुक्ताय खेटककेदारे नगरकपथके देवापक्षिग्रामे दक्षिण
 परसीमि कव्यान्मिषिकवक्त्रकेदारक[श्रुति]सिद्धक्षेत्रं रण्यकविरक्त
 पद्मखेटकमानेन ओहिपिदकदारा बहुभिः खड्गैरवस्थितं यत्र प्रथम
 खड्गस्याप्याजानपूर्वतः ग्रामादुत्थितः रोहिणीयर्ज्यामवायी यत्रा
 दक्षिणतः दोधकसरोऽपरतः कवित्याविक्रयामादुत्थितः मञ्जुक्याम
 वायी यत्राःदन्तुरमेचकश्राणिक्षेत्रं तथाद्वितीयखड्गं यस्य पूर्वतः करि
 व्याविक्रयामादुत्थितः मङ्गल । ५४ । ग्रामवायी यत्राः दक्षिणतः
 रोहिणीयर्ज्यामसीमा अपरतः तापसपक्षिकाग्रामसीमा उत्तरतःर-
 विकोयक्षेत्रं नवमिदमाप्या[दनविशार्ज]सकेदारिकभूमिकं सार्द्धक्षेत्रं १
 तथासुराङ्गकलकाणक्षोदकप्रवज्जम्बवानरग्रामे पूर्वसीमि आदित्यदास
 भागिककास्या प्रकटपरिक्षा विंशतिभूपादावर्त्तपरिसरा वापी यस्याः

Abstract translation of No. 1. of Dr. A. BURNS' Tamba-patras.

Glory. From BHATARKA, the best of rulers, magnanimous as the sun, victorious, of good disposition, who obtained his power by the excellence of his intelligence, by gratifying and elevating his friends in spirit, and by obtaining all men's good opinion through donations and courtesy, who by his power maintained men in respect, and through the fidelity of his servants preserved his dominions in prosperity, and laid his enemies prostrate, sprung GUHA SENA, who obtained absolution from sin by bowing submissively to his father's feet, and who was called GANDHARBA Rāja, because of his consideration for other men, as shown by his regulation of prices, by his anxiety to protect his people and friends, and by his sacrificing high state interests to secure the safety of those who took refuge with him, who obtained popularity by giving to the poor more than they asked. None excelled him in the science of Gandharba. Enriched by the jewels his enemies presented in tribute, of a voice pleasant as that of Cupid and the moon, lenient in the exaction of state dues, a teacher of morals, in all observances never failing, great and powerful, as manifested by the motions of his elephants, his wisdom and sound judgment are appreciated by men of social feelings. The son of GUHA SENA, SRIDHARA SENA, likewise absolved himself from sin by submission to his father, as if he had washed in the Ganges water. The warriors of the universe were astonished at his strength and skill, and by his power he secured the prosperity of his kingdom. Like his ancestors, he was a protector of learned and eminent persons, and a subduer of the evil-doers and corruptors of virtue. In him only did LUKHSMI and SARASWATI (wealth and knowledge) unite. For he was alike a subduer of lakhs of enemies, and abounding with wealth, and the possessor of all acquired endowments, which sought refuge with him, like the thousands who prostrated themselves before him for their livelihood.

The son of SRIDHARA SENA, SRI SILADITYA, worshipped likewise his father's feet, and prospered. The four quarters of the world were adorned with his fame, won by merits, all delighting, all astonishing. He gave courage and confidence to his army, by acquiring for it the lustre of a reputation founded on many victories. Though possessing an intellect capable of understanding and arranging the good and bad sciences, and famed in the world for his intelligence, yet was he not fastidious; and though attentive to the wants of others, still always cheerful and contented. He was an example of the *Satya yoga* rājas in his conduct, and enjoyed happiness without any sacrifice of virtue. His second name was KRAMADITYA, (perhaps VIKRAMADITYA.)

SRI SILADITYA was succeeded as rāja by his younger brother *ISHWARA GUHA, who was dutiful and obedient, and therefore loved by his elder brother, who was honourable like Upendra. It was the study and the delight of ISHWARA GUHA to obey his elder brother's commands, and to make his own power and wealth conducive to his happiness. His footstool was bright with the jewels taken from the crowns of hostile rājas brought to subjection. Yet was he never reproachful of others. Those who opposed him in their pride were reduced to helplessness. The vices of the *Kali yoga* were forgotten through his virtues and talents. His magnanimity made him tender of the faults of others, and his heroism was apparent to all, so that the *Lukshmi* of the sovereigns he subdued and destroyed with the weapons of his wrath, took him by the hand. Great was his wealth, and unity characterised none of his qualities or attributes.

The son of ISHWARA GUHA was SRIDHARA SENA who overcame and silenced all the learned men of his age. He had the conviction of his foes' mortification and envy, because of his own power, wealth generosity and magnanimity. With the gravity of deep learning, acquired by mastery of the sixty-four Vidyas, and by acquaintance with the manners of many nations, he united cheerfulness and mildness, and by nature he was gifted with humility. By the power of his bow he subdued the pride of his enemies—his bow victorious in many battles. The rājas, overcome by his skill in weapons, delighted in their subjection to him. DHARUVA SENA, the younger brother of SRIDHARA SENA, was obedient to him, and prospered in wealth and honor, and rivalled the kings of antiquity in his conduct: many affairs of great difficulty were completed by him, and the friends he trusted and employed on great occasions, were enriched by him. He was as a sanctified hero, devoting himself to human actions; such was his attention to the minutest studies. Like SWAYAMBHU (MENU) he was endowed with all attributes—patient in learning every branch of the sixty-four Vidyas. The resource of all for counsel—beautiful as the spotless moon, and resplendent in power as the ever-rising sun, darkness was dispelled from around him. He was versed in the arts of peace and war—a deviser of schemes adapted to all purposes and occasions, having been taught by the learned the two great aims—to do good to the world, and to promote the exaltation of his kingdom. Though powerful, he was compassionate and learned, and avoided sin, and was firm in friendship with those who submitted, but prompt to repress his enemies before their prosperity gained head, thereby establishing over all people the ascendancy of a superior mind.

* This is the rāja called CHARA GRHA by Mr. WATSEN.

The second son of DHARUVA SENA was SRIDHARA SENA, very learned, a king of kings, excelling in wealth ; whose forehead, worn and reddened by the frequency of his obeisance to his father's lily feet, looked as if adorned with the crescent of the young moon. His ears were ornamented with pearls like moons, and his body was cleansed with ablution from the waters of munificence, according to the precepts of the Vedas which he never forgot. He gave delight to all, as a water-lily spreads its fragrance, by abstaining from the resumption of grants. His bow was drawn for the good of the universe, and he excelled in archery. The leaders of his enemies' armies, immediately on his mounting his war elephants, yielded submission to his orders.

The beautiful kingdom of VALABHADRA came next to DHARUVA SENA, son of SILADITYA, who was brother of SRIDHARA's grandfather, as a prize-wreath conferred by public opinion, and was to him an ensign of fame. He was the master of many armies, beautiful in person, sincere and young, and with his hair resplendent with gems, casting radiance over his courtiers, like the flower *mandra*. His fame, bright as the full moon, delighted the hearts of all, and his lily feet were placed on white marble. He promoted the fortunes of his friends, was sincere in heart, and good to all. His face was like the autumn moon, and his hair like the streaks in an emerald. His enemies were humbled, and the kings opposed to him found their territory invaded, and were indebted to his bounty for the moderation of the tribute he demanded ; by the fragrance of his breath the air which others breathe was perfumed ; from his ears precious stones of various colours were pendent, like jewelled ornaments upon the volumes of sacred learning. On his breast he wore a jewel, like the sprouting shoot of his youth watered by the sanctity of his munificent donations. His elder brother was ISHWARA GUHA, whose person was embraced by LUKSHMI for the promotion of his good fortune, who excelled all rajas in conduct and in fame, who with the wand of his power destroyed the serpent of his enemies' pride, and gained over the LUKSHMI of other kings who admired him, who restrained crime, and adorned the earth with the lofty ensigns of his power, and settled the customs of the four great castes. His lily feet are adorned with the crown jewels of prostrate chiefs, subdued by love rather than by force. A refuge to all in battle, brave, and in all things virtuous, performing all the duties of royalty, and amongst them the liberal distribution of gifts to brahmans, and to the temples of the gods, from the wealth in his possession, which is to them a source of great delight. The earth was enlightened with the fame he gained by his munificence to gods and brahmans of the Ka-

jinga families, who were deprived of their *Dharmadwajja* (flag of virtue) which was white as pure pearls, and the people of the three regions shed tears of joy. The other name of DHARUVA SENA was DHARMADITYA, a name given to him only for his virtue.

The said prince* (DHARUVA SENA) inheritor of his father's fortunes, whose dalliance is with fame as with a wife, and whose crown jewel is like the crest of a peacock, who adorns the royal LUKSHMI as a lion adorns the forests on the mountain side, and scatters his enemies as the rainy season dissolves clay; whose friends' countenances expand for joy like water-lilies, while the flags of his enemies are dispersed like clouds; powerful, diligent, of spirit like the rising sun, the destroyer of his enemies, son of SILADITYA, the elder brother of ISHWARA GUHA, who enlightens the earth with his fame like a moonbeam, and who, smearing his body with sandal-wood dust, is beautiful like the Vindhya cloud-capped mountain, proclaims to all: Be it known to all of you, that for his father's and mother's virtue's sake, he, the said son of SILADITYA, has presented to the brahman LADHULLA, son of the brahman SÁNDA, a religious student, venerable, acquainted with the four Vedas, who lives in the villages situated near the hill fountains, the fertile field called *Varunam Bilika Vukkara Kadáraka*, situated near another field, and on the road, southwest of the village named *Dya Palli*, having had the same measured by HIPIDAKA with a measuring rope. The field is divided into six portions.

(Here follows a minute description of the boundaries, which need not be given.)

The above land, with its tanks and hillocks, being of the measure of half a kshetra, is to be enjoyed in full property as a perpetual inheritance by the said LADHULLA, his sons and posterity for ever, so long as the sun, the moon, the earth, the rivers, and the mountains shall endure. It is productive land and capable of rearing valuable grain.

Let not the hands of the king's servants touch it, nor let any one claim it on the part of the gods and brahmins by whom it was heretofore possessed.

"To give land," &c. &c., (here follows the usual quotation in favor of donors and in execration of resusers of grants.)

This grant is executed by order of DHARUVA SENA, son of the king SILADITYA, by his faithful servant for peace or war, keeper of his

* The word for prince in the original is *Sailaditya*, which I am assured is a legitimate patronymic from SILADITYA. It is evident that DHARUVA, the son of SILADITYA, is meant from the closing sentence of the grant.

treasury, MADANA HILA, son of SKANNA BHATTA, in the year Sum-but 365 (A. D. 309) on the first day of the light half of the month of Bysakh.

On the seal, SRI' BHATARKA under a bull, as in Mr. WATHEN'S grant, for which see vol. IV. page 475.

VI.—*Information regarding Illanoon Pirates. By Captain BLAKE, H. M. S. Larne.*

In the course of the past year, Capt. STANLEY, H. M. S. *Wolf*, with the *Diana* steamer in company, fell in with a fleet of pirates in the act of attacking some Chinese trading vessels, and having rescued these, the steamer followed, and by its rapid pursuit and well-directed fire captured and destroyed several of the pirates. The prisoners taken on this occasion were carried to *Singapore* for trial, and the Malays were convicted and executed, the facts being such as to prove that the fleet attacked had committed more than one act of piracy, before the British vessels fell in with it. But amongst the prisoners were some *Illanoons*, and it appearing that many of these pirate vessels were of that nation, the Recorder who tried the case would not pass sentence of death upon them, owing to some doubts which arose, as to whether they might not be acting under commission from the Sooltan of *Sooloo*, or from some other recognised prince of that part of the Archipelago. Very little information was procurable as to the political character and circumstances of these *Illanoons*. But they were not wholly unknown, for in the year 1822 it was this same class of pirates who attacked the *Seaflower*, and Mr. FULLERTON, then governor of P. W. Island, was disposed to have sent an expedition for their chastisement, but was restrained by the government of Bengal. There is also an imperfect mention of this race in Mr. MOOR'S recent compilation of notices regarding the Indian Archipelago, which contains the intelligence collected by Mr. HUNT regarding the *Sooloo* Islands in 1814: but the information procurable was altogether so defective, that it was determined to take the occasion of any one of H. M. vessels of war proceeding to the vicinity, to ascertain further particulars regarding them. Captain BLAKE, of H. M. S. *Larne*, found the opportunity of making the desired inquiries, and the following report from that officer is the result. It has been communicated by His Excellency the Naval Commander-in-Chief to the Governor General, and by His Lordship's orders is made available for publication in this journal.

TO SIR FREDERICK L. MAITLAND, K. C. B.

Rear Admiral and Commander-in-Chief.

SIR,

In compliance with your memorandum of this day's date, to "report to you any information I may have been able to obtain during my stay at *Manilla*, respecting the state of piracy in the *Sooloo Sea*," I beg to inform you, that on the arrival at *Manilla*, about two days before my departure, of some *Singapore* papers, containing the particulars that transpired at the trial of the "Illanoon" pirates at *Singapore*, lately captured by Her Majesty's sloop *Wolf* and the Honorable Company's steamer *Diana* off *Tringana*, I sought an interview with Don JOSE ARCONI a post captain in the Spanish royal navy, and Don VILLASICENZIS his assistant, two officers who have been employed for some years in watching and suppressing piracy amongst the southern group of the *Philippine Islands* and *Sooloo Sea*, and I may observe that the former officer, while I was at *Manilla*, received his promotion from Spain for his exertions on this service.

It appeared from their statements, that the "Illanos," as they call them, are a distinct race of people, inhabiting the line of coast comprised within the bight of the bay of that name in the island of *Mindanao*, the shore of which is there one continued line of mangroves and swamp, and which soon communicates with an immensely extensive inland lake. This lake they consider as their stronghold and their home, and these people are termed by the Spaniards "Los Illanos de la Laguna." Here they build and repair their prahus, which they convey to and from the sea by means of ways or platforms constructed of bamboo and ratan and placed on the unsolid surface of the mangrove roots and branches, over which their prahus are hauled to and fro. On this lake too they have their wives or females in the prahus, in which they live, and in short, here they carry on all intercourse with each other as an insulated and distinct community. Born and bred in a life of piracy, they look on it merely as a means of living, and not as a criminal occupation. For this reason they meet with nothing that escapes their attack in the shape of native vessels of those seas; but I was especially assured, and all accounts seem to confirm it, that they are quick and intelligent in the extreme, in discriminating and instantly avoiding a canvas sail, or any vessel of European appearance; and so dexterous are they, that they in a moment lower mast and sail, and are hauled in among the mangrove shores with which the innumerable islands thereabouts abound; and though the *Manilla* government maintains a constant establishment at different points of *Mindanao*, especially at *Samboongan*, it is but rarely that their

falucas, or (gun-boat launches) succeed in capturing any of the "Illanos." Two of them however were surprised and secured in the early part of this year, and their crews amounting together to about sixty were in prison at *Manilla*. As they were not captured in any act of piracy they are merely kept as prisoners, but what their ultimate destination may be I know not.

The distance to which the "Illanos" extend their cruizes is shewn from the late capture off *Tringana*: but I was much surprised, when pointing this out on the chart to the Spanish officers abovementioned, at their assuring me, that they had no doubt the pirates made their round south of *Borneo* to the coast of *Siam*; that there is a pirate tribe on the north end of *Borneo*, daring and atrocious as themselves, between whom and the "Illanos" exists, and always has existed, a most deadly and unextinguishable enmity, and that the latter will never pass by the northern route. If these two tribes of depredators do meet, a most sanguinary conflict ensues, and I was assured, that either of them will even quit their plunder to attack the other, and thus prefer the gratification of feelings of hatred and hostility. The object from which the "Illanos" derive their principal booty in their cruizes, is the captives they make and sell on all parts of the eastern and southern coasts of *Borneo*, and in the *Macassar* straits. To this they principally direct their attention, after they have supplied themselves with a sufficient number to pull at the oar and do the other work of their prahus.

They seldom cumber themselves with any thing from the cargo of a capture, save gold dust or other valuable goods.

Though other descriptions of pirates infest those seas, the "Illanos" are always known from the peculiar construction and dexterous management of their prahus. A drawing of one of them was shewn to me, which minutely corresponded with the description given of the one captured off *Tringana*.

It has been supposed that these "Illanos" are subject to and act under the directions of the *rája* of *Sooloo*, but I was most positively assured by the Spanish officers mentioned above, as also by His Excellency Don ANDRES GARCIA CAMBER, governor of *Manilla*, that such is not the case. Captain Don JOSE ARCONI has had some communication with the *rája* of *Sooloo*, and is acquainted with his situation, his means and his habits. He assured me that the *rája* had neither means, power, nor influence over these "Illanos;" that they are a race purely piratical, of a distinct community of wild ranging predatory habits, dependent on no one, and acknowledging no external authority. It is true they frequent the island of *Sooloo* as they please, quite unmolested,

and without hindrance, as well as the other innumerable islands and mangrove banks (called by us the *Sooloo* islands), supposed to be subject to the rāja's sovereignty. One of these, called "*Bang een ghee*," eastward of *Sooloo*, is a principal resort for them, as it affords convenience and facility for their piratical pursuits. It is principally mangrove growing upon coral banks, and is well calculated for protection and secure concealment.

I was informed by Don JOSE ARCONI, that he had witnessed at one time nearly two hundred "Illano" prahus, great and small, off this island, and on attempting to chase them with his "Falucas," they outstripped all pursuit, and disappeared in the most extraordinary manner, dousing masts and sails, and taking refuge among the mangroves. He compared these haunts to extensive nests, or banks of rats, where they can fly from one refuge to another, and which no means, we Europeans here possess, could ever succeed in annihilating.

The island of *Baselan*, I was also informed, is a common resort of the "Illanos," and some of its inhabitants are pirates from their birth, and it is not unusual for them to identify themselves with the "Illanos." Although the whole *Sooloo* group is subject to visits from them from time to time during their cruizes, they are in the habit of resorting to no other fixed points except "*Baselan*" and "*Bang een ghee*," the first of which is an island of very considerable size. They generally obtain their supplies of ammunition, &c. by trafficking with places of their acquaintance, which are in communication with the various small Dutch settlements on the coast of *Borneo* and the islands.

The boldness and audacity of the "Illanos" cannot well be exaggerated. They have been known to enter the bay of *Manilla*, passing the signal station on the island of *Corregidor*, where two gun-boats are generally stationed, and to capture boats or small vessels within the bay. This I believe was proved on the late trial by two boys, who were captured by them in a boat off *Cavite*, about eight miles from the city of *Manilla*. From the "*Laguna*" which they inhabit in *Mindanao*, they have been known not unfrequently to push a passage in their prahu out to the northward by a small river which runs from the lake into the sea at "*Cay-gain*," where there is a Spanish settlement, a fort, and always a company of soldiers, whose random fire from musketry, after they have got clear, they have ridiculed by loud shouts and wild yells of defiance. If they have reason to suspect that a particular look-out is kept for them when on their passage to seaward by the Spanish falucas stationed at *Samboangan* and its neighbourhood, their quickness and penetration are incredible. They will move their

prahus with caution along the edge of the mangrove banks by night, even for ever so short a distance, and haul them into an impenetrable concealment ere the dawn of day, and at last gain their object by persevering in their progress night after night, while look-outs are kept constantly on the edge of the mangrove banks unseen during the day.

The Spanish officers confessed to me, that their attempts to capture them were almost uniformly foiled by their quickness, cunning and sagacity; and strange as it may seem, these extraordinary marauders, acknowledged foes to all they meet, through the advantage of locality, their own adroitness, the peculiar construction of their prahus, and other natural circumstances so favorable to their lawless pursuits, maintain in spite of every thing a constant intercourse with their home the *Laguna*, almost without interruption.

It may not be irrelevant here to mention, that a treaty (so called) was concluded between the *rāja* of *Sooloo* and the late acting governor of *Manilla*, SALAZAR, about two or three years since; this treaty is however proverbially ridiculed at *Manilla*, as having been made with an individual ignorant of the faith or meaning of a treaty, a mere cypher, nominally a *rāja*, but possessing no control over his subjects who regard not his authority and yield him no allegiance. This may tend to confirm the assurances made me, that the *rāja* of *Sooloo* possesses not a shadow of power or influence over the community of the "Illano" pirates.

The foregoing details are recited from memory, but are the true substance of information I gathered, during a long verbal communication, over charts, with the two very intelligent Spanish naval officers before mentioned: and though they may not throw much additional light on the information already abroad on the subject of piracy in the *Sooloo* sea, they certainly tend to confirm, or explain some remarkable points of the evidence, that transpired during the late trial of the "Illano" pirates at *Singapore*.

I have, &c.

(Signed) J. J. BLAKE,
Commander.

Her Majesty's Sloop Larne, }
Toong-koo Bay, 13th Aug. 1838. }

VII.—*Proceedings of the Asiatic Society.**Wednesday Evening, the 5th December, 1838.**Present.*

The Right Rev. LORD BISHOP of Calcutta, V. P. in the Chair.

Messrs. H. T. PRINSEP, EWART, HARE, Col. D. McLEOD, Captain PEMBERTON, Major GREGORY, Lieut. MONTRIOU, Dr. EVANS, Dr. McCLELLAND, Dr. SPRY, visitor, and Dr. W. B. O'SHAUGHNESSY, Officiating Secretary.

The proceedings of the last meeting were read and confirmed. The Secretary rose to return thanks to the Society for the honor conferred on him by his nomination as one of their Secretaries during the absence of Mr. JAMES PRINSEP. He also informed the meeting, that pursuant to the arrangement made with Mr. MALAN for conducting the duties in the Oriental Department, they would carry on a new series of the *Journal of the Asiatic Society*, after the current year.

Dr. GOODEVE and Mr. R. O'SHAUGHNESSY were proposed by the Secretary, seconded by Capt. PEMBERTON.

Read a letter from Professor OTTOMAN FRANK of Munich, acknowledging his election as an honorary member.

Read the following extract of a letter from Major TROYER to the address of Mr. JAMES PRINSEP.

"Paris 31 Rue de la Madeleine, 15 July, 1838.

"My dear PRINSEP,

"I had the pleasure of writing to you a month ago in answer to the most valuable account which you gave me of what has been done by you with respect to the copying of the Vedas for the French, and communicated to Mr. SALVANDY, the minister of Public Instruction. In answer to it, he ordered that an annual sum of 1500 francs be sent to you, (JAMES PRINSEP,) until the completion of the whole work, that is until the whole mass of Vedas be copied. You will undoubtedly receive an epistle from him on the subject. This will be the continuation of a great trouble to you, but I have the pleasure of assuring you that the service which you render by it to all those who take an interest in Sanskrit literature and in Indian antiquities will be duly appreciated. Be pleased to correspond upon the matter as hitherto with me, and I will not fail to be your faithful reporter to the French minister of Public Instruction. I am forwarding to you with this a letter from BURNOUR, who will, among many other things, tell you, that the decoration of the legion of honor is to be offered to Mr. HODGSON of Nepal, as an acknowledgment of the trouble which he took in procuring and sending to Paris important Sanskrit manuscripts belonging to Buddhism, which religion appears to grow every day in extent and antiquity. You will be very sorry to hear of JACQUER's death, at the age of twenty-eight years. You will be able to judge yourself what hopes have been buried with that learned and uncommonly active young man.

"BURNOUR is beginning to print the Bhagavat purana with a French translation. You will, before the arrival of this letter, have received a large chest of books sent you by Mr. CASSIN, Agent to the Asiatic Society of Paris. I can but recommend you once more to send your Journal, and every oriental work to be sold, directly to Paris, addressed to Mr. CASSIN, Agent de la Société Asiatique de Paris, Rue de Casanini, No. 12. The sale will be effected better than it can be in any other way, for it is not easy to a great number of persons on the continent who may wish to buy oriental works, to procure them from London, whilst they may easily get them from, or in, Paris."

(Signed) A. TROYER.

Read extracts of a letter from M. GARCIN DE TASSY, dated Marseilles, 11th September, 1838, acknowledging receipt of catalogue of Arabic, Persian and Oordoo works belonging to the Asiatic Society. M. DE TASSY's letter gave cover to a prospectus of his work on Hindustani literature. The prospectus with a list of subscribers is printed in the number of the Journal of the Society for November.

Read extracts of letters from M. E. BURNOUR, Secretary, Asiatic Society of Paris, in acknowledgment of several numbers of the Journal of the Asiatic Society.

Read an application from HERAMBANATH THAKOOR, applying for an increase of his salary.

Resolved, that the application be referred to the Committee of Finance to settle the amount.

On the suggestion of the President, seconded by the Secretary, Mr. W. GRANT was proposed a member of the Statistical Committee.

In pursuance of a letter addressed to the Society by Mr. Secretary MACNAGHTEN, read on the 10th October last, regarding the interchange of publications with his Highness the Pasha of Egypt, the Secretary apprized the meeting that he had forwarded a set of all the Arabic publications printed by the Society to his Highness the Pasha of Egypt, and likewise certain Arabic books selected by Mr. PRINSEP and purchased by Government for the use of the institutions established by his Highness.

Library.

The following books were presented.

On the primary forces of electricity, by RICHARD LAMING, M. R. S.—*by the Author.*

Proceedings of the Geological Society, Vol. II. No. 36—*by the Society.*

Notice sur des Vêtements avec des Inscriptions Arabes, Persanes et Hindoustani, par M. GARCIN DE TASSY—*by the Author.*

Meteorological Registers for September and October, 1838—*by the Surveyor General.*

Lardner's Cabinet Cyclopaedia—History of England, Vol. 8—*from the booksellers.*

The officiating Secretary laid before the meeting a printed list of the Members of the Society, prepared by Mr. JAMES PRINSEP.

Resolved, that the copies be distributed among the Members.

Read a letter from the Right Rev. JOHN LEWIS, Bishop of Isauropolis and Vicar Apostolic of Bengal, forwarding a copy of his publication of the Cochin-Chinese and Latin and Anamitan Dictionary, and requesting the Society to apply to Government for 100 copies of the Anamitan part of the work, besides the 100 copies already offered by the Author.

Resolved, that an application be made to Government for the purchase of the additional copies, as requested by the Bishop of Isauropolis.

Literary and Antiquities.

Read a letter from Captain F. DASHWOOD, Assistant Secretary to the Military Board, intimating that the principal commissary of ordnance has been requested to send the Buddhist stone pillar, on its arrival from Delhi,

to the Society, being a present announced at the meeting held on the 7th February last, from the Maha Rajah HINDU RAW.

Read a letter from H. T. PRINSEP, Esq., Secretary to the Government of India, forwarding copies of the Inscription and a tin roll of the remaining facsimiles of *Girnar*.

Read extracts of letters from M. EUGENE BURNOUR, Secretary to the Royal Asiatic Society of Paris, to Mr. JAMES PRINSEP, dated Paris 16th May, 1888. M. BURNOUR notifies the despatch of copies of his commentaries on the Gaina, and of the first and second parts of his *Memoirs sur les inscriptions cuneciformes*. The price of the Gaina is 65 frs ; of the inscriptions 20 frs. M. BURNOUR then writes—

"I have just seen in your Journal the proposal to publish lithographs of the caves of Western India; I beg to be added to the list of subscribers for a work of such high interest, and one which ought to be imitated in all parts of India. It is scarcely comprehensible that the ancient monuments of a country so entirely subject to your government should have been so much neglected. DANIELL's views are immeasurably too dear, and are not sufficiently comprehensive.

"I have seen your (*charmant travail*) on the famous Pali inscription. The fact is of the highest importance, and you have acquitted yourself so as to deserve the utmost honour. Doubtless some difficulties still remain, of which I think the most serious is the name of the king of *Ceylon*. But other inscriptions will probably annihilate this difficulty; you are now in the high road of discovery and we have every thing to hope from your persevering and prosperous efforts. We are far from making such swift and brilliant progress. We want monuments and have philology alone to study. Still even in this there is room for discovery in all that concerns religion, philosophy and literature—although even such must yield in striking interest to historical disclosures. The task of commentary and interpretation of the ancient texts is tedious and dry, but it must be persevered in. We must be supported by the hope, that these ancient words and forgotten forms may be found again on monuments and coins, and thus lead to the understanding of these valuable remnants of a venerable antiquity.

"The Mahabharat still prospers. I induce 'tout le monde' to purchase copies, by affirming positively (which I believe to be true) that in 10 years this fine monument of antiquity will not be procurable. The truly remarkable sale of this work is a certain unequivocal indication to your Society of the duties it has to discharge, and which are expected from it by the learned of Europe—doubtless you will not find purchasers for every *Vade mecum* and every work in Sanskrit, Arabic, Hindi, and Bengali which your translators may convert from the English; but I assure you that you will dispose of the Mahabharat, however voluminous it may prove, and that you would ere this have exhausted the Vedas and Puranas, if you, or rather the former Committee, had undertaken them instead of the *Mitakshara* and similar short treatises on law, which will very soon find no readers in Europe. But in the great productions of ancient thought—in the vast monuments of Indian genius, in such there is immense interest. Despite of the progress of industrialism, (I mean no offence to Mr. TREVELYAN,) Europe will read the Mahabharat, the Vedas and Puranas, unless your scheme of lithographing these works should fail to be carried into effect. Lithograph the Veda and you will gain immortal glory. If this enterprise, like the former, requires you to make some advances of funds, you may be convinced they will very soon be covered and more than that. Look to the Mahabharat! Instead of 100 copies, lithograph twice that number. If you cannot do so for the Vedas, which I would bitterly regret, let us at all events have the Ramayana, the 18 puranas, the codes of Narada Vrihaspati, Vishnu, Saakhas Lekha, Shalashada, Yadma Valkya, with good commentaries on the great metaphysical treatises of *Vrimansa*, *Saukya*, *Vedanta Nyayosa*, the rituals and the *Upanichada*, &c. &c."

Extract of a letter from M. BURNOUR, dated 12th July, 1888.

"M. JACQUET died the day before yesterday of a disease of the chest. He was but 28 years of age. This is a real loss: he was a highly informed, most sagacious man, well skilled in Sanskrit and Chinese. His illness scarcely abated his zeal. He was writing in fact half an hour before his death.

"We expect impatiently the arrival of the 3rd volume of the Mahabharat which, as I see with great pain, occasions you some pecuniary loss. We are taking every possible step to sell the work; in general there is a considerable demand for Sanskrit publications, provided they are ancient and complete. Still this demand is not equal to that for the Romances of Lord Byron, and I fear no one will make a fortune by Sanskrit impressions. But it would be painful to think that the little success of the Mahabharat should prevent your publishing other works, such as the Puranas, &c. &c. Send a prospectus with terms. We will obtain some subscribers, and when the work is completed, additional copies will doubtless be disposed of."

(Signed) EUGENE BURNOUR.

Museum.

Read a letter from Mr. T. CHURCH, stating that the bows and arrows presented in his name by Mr. J. P. GRANT at a meeting of the Society held on the 1st August, were not from Penang, but from natives of the great Andaman.

Read a letter from Lieut. M. KITTOE, requesting to know the salary of the person employed by the Society to go with him in his survey of the Raepur road in the forests of Orissa, for the purpose of preparing specimens of Natural History for the Museum, and also applying for an advance of his salary for one month, which was paid by order of the President. The advance was sanctioned by the meeting.

Dr. O'SHAUGHNESSY stated that the specimen Malacca bell, presented by Mr. LEWIS at the last meeting, contained neither gold nor silver and was composed of tin and copper in the ordinary proportions of bell-metal.

Extract of a letter from C. B. GREENLAW, Esq. to the same, with remarks on the subject by Mr. McCLELLAND.

"Referring to the article at page 65 of the Asiatic Journal for January last, I some time since noticed to Mr. JAS. PRINSEP the existence within the volcanic belt in the map of what is called the swatch of no ground, which, by the late survey of the sea face of the Soonderbus, which includes the northern part of the swatch, would appear to be in the form of a deep crater; and it would be interesting if its margin could be traced throughout its course, which I will ask Capt. LLOYD to do if he can. The purport, however, of my now writing is to send you a piece of rock just taken from the bottom of the H. C. barque *Amherst*, which, on her late passage from *Khoul Phyo*, struck on the *Terribles*, and brought away this piece. These rocks, the *Terribles*, are also within the belt marked in the map, and to my inexperienced judgment the rock seems to be of a peculiar character.

"With regard to the swatch, it would seem from a subsequent note to the one alluded to by Mr. GREENLAW (PRINSEP's Journal, 1838, p. 369), that Capt. LLOYD has reason to suppose it is open to seaward. It is needless to say that any additional information that can be obtained regarding so peculiar a phenomenon in the geology of the coast, must possess the very highest degree of interest in a scientific point of view, and perhaps the best method of proceeding as occasions offer, would be to take soundings in different lines, so as to show the form of the basin and the inclinations of its sides.

"The specimen of rock from the *Terribles* is a sea green and rather soft sandstone, corresponding in appearance with a very common formation that skirts the base of some of the great mountain ranges in India; its surface is harder than its internal parts and of a brown color, deeply perforated by boring molluscs, and corroded by the action of the sea. One part of the mass has somewhat of a nodular or concretionary character, as if it had once been broken and reunited, but this may, probably be the effect of corrosion. Viewed under a magnifier, it is seen to be chiefly composed of angular granules of quartz, connected with greenish and black rounded particles, the whole being a little coarser than the deposits now forming at the head of the bay much nearer land. It is unquestionable therefore, that the *Terribles* are sedimentary deposits, that must have taken place at greater depths than the reef now

occupies. It is also certain, that unless there be some counteracting forces engaged, the action of the waves together with that of the boring shell-fishes (*Lithodomi* and a kind of *Teredo*) the danger of these rocks must be gradually diminishing. Hence the importance in a scientific point of view of the accurate surveys of this coast now in progress; for had such been made 100 years ago for instance, we should now be able to learn the relative changes that may have since taken place between the levels of the land and sea. No one knows any thing of the molluscs of the Bay of Bengal: we cannot therefore tell what animal it is that has perforated the fragment of rock thus accidentally brought away from the *Terribles* in the manner described, and which must aid the operations of the waves materially in breaking down this dangerous reef. I may take this opportunity of pointing out the identity of the perforations in the submerged reef with those that have been formed under similar circumstances in the sandstone of *Cherra Ponji*, and which may be seen in several specimens of the latter rock now in the museum. To illustrate this subject still farther, I may submit to the Society a sample of the work of a *Teredo* which rapidly devours trunks of trees and all woods that are cast on the shores of the Bay.

"This last specimen I received from Dr. CANTON, the only naturalist who has paid the slightest attention, that I am aware of, to the molluscs of the Bay; the perforations in the wood are identical with those of the lithophagus teredo on the rock, though neither animal has yet been described, but we may perhaps consider the former to be the *Teredo navalis* or the *T. Clava*. Several similar animals are however known to inhabit the seas within the tropics; but the *fistulana* that perforate rocks, though in a geological point of view the most important of all, are not, I believe, known but by their perforations."

Extract of a letter, dated 7th November, 1838, from Captain G. C. ARMSTRONG to Mr. McCLELLAND, accompanying a box of minerals which are presented to the Society.

"This station is in 22° 36' N., and 86° 40' E., nearly surrounded by hills, at distances varying from 5 to 25 miles off. The soil in the cantonment, and to some distance is clay (from the decomposition of felspar), mixed with small fragments of quartz containing both iron and red oxide of manganese in large quantities; the surface is covered with a little vegetable mould.

"The hills west 5 miles off are formed of large boulders of greenstone and quartz; to the south granite, greenstone, clinkstone, and small portions of white marble; to the north mica slate in very large quantities, imbedded with schorl in aggregate crystals. In the *Roro* river and its vicinity, slate, limestone, jasper, quartz rock, and rock crystal are found." Capt. ARMSTRONG thinks there are also indications of coal in this part of *Singboom*. Coal, I may remark, has recently been observed by Dr. DUNBAR of the same corps on the way from *Ramgur* to *Hazareebaugh*, but it is probably that which was before observed by Mr. DRUMMOND of the latter place."

Read the subjoined Report by the Curator on several objects of natural history recently added to the Society's collection.

Skeleton of the long-lipped bear, *Ursus labiatus*, (BLAINVILLE.) *Bradypus ursinus*, (SHAW,) presented by the Curator, under whose supervision it has been prepared and artificially articulated for the museum.

Of the now several admitted subdivisions of the genus *ursus*, the present individual ranks as one, and forms a perfectly distinct species from any of the present known varieties; its geographical range being confined exclusively to continental India—at least we are warranted in so limiting its distribution, no accounts having as yet verified the existence of this animal in any of the tropical forests of the Indian archipelago, or in fact in any other parts of the globe—until future discoveries prove the contrary, it may therefore with propriety be regarded as one of the natural zoological productions peculiar to India proper; and were not the specific name '*labiatus*' so well applied as a systematic denomination in illustrating one of its most prominent distinguishing features, the employment of the topical name '*Indicus*' would, in my humble opinion, be much more appropriate than on the many ordinary occasions where it is given.

Although our animal may probably differ from those of cold climates in some minor points, it nevertheless possesses all the generic characters of the typical bears, and is the nondescript animal, and again the ursine sloth of early zoological writers.

This being the only skeleton of any kind of bear at present in the Society's collection, I am unable to make any comparative remarks, or trace out the specific peculiarities, if any exist, with regard to its ossific structure. The bones on the whole are strong and powerful; and though not yet arrived at maturity, as shown by the still unconnected state of the epiphyses, they indicate by the full display of the large eminences and depressions for the origin and insertion of massive muscular levers, that the fabric belongs to an ungainly and thickest animal. Independent however of its clumsy appearance, the general contour exhibits a fine adjustment of its several parts to the well known peculiarities and habits of the living animal, while the structure and organization of the foot marks it as a type of the plantigrade order—in this respect differing—and offering a fine contrast to the more agile feline carnivora—which are again the types or representatives of the more perfect digitigrades, the toes only touching in the latter, while in the bears the whole heel rests perpetually upon the surface of the ground.

The dentary system is perfect in all its parts; the jaws containing six incisors above and below, the absence of which in the generality of crania which are transmitted to Europe, and which generally fall out at an early period of life, must have led to the error of associating the animal with the *Edentalis* or Sloths. The series of well-defined tubercular molars, together with the anatomical structure of the stomach and alimentary canal, would seem better fitted for vegetable than animal matter, though I have no doubt this animal occasionally eats the latter; it is well known however, that bulbous roots, sugar-cane, and white ants, are the natural and principal food of this our Indian variety of bear.

It is to be regretted that the animal was received in a too advanced state of decomposition to admit of a very critical examination of its internal organization, much less of allowing the digestive apparatus to be preserved as specimens of comparative anatomy.

Antelope..... ? Gazelle.

Presented by the late Mr. BELL, with the following short note, descriptive of its habits while in his possession.

"This (I suppose the real Gazelle) was as tame as a dog, jumping upon every one at table. We have had it as a domestic pet about a month, but could never hit upon its proper food. Grain it was indifferent about, and would hardly touch any thing but dates, dressed vegetables and roses, all which had a tendency to give it a bowel complaint: nevertheless it was recovering fast, when it unfortunately got into an enclosure where some large antelopes were kept, and was found bleeding about the abdomen. I fear it must have received some severe hurt from their horns. I now send it dead."—October 29th.

At present I have not been able to identify this delicate and graceful little animal with any of the recognized species of the group to which it evidently belongs.

The specimen is a young female, characterized by rudimentary horns, want of the usual development of the suborbital sinuses peculiar to the deer tribe, having tufts of hair below the knees and on the pasterns, possessing inguinal pores, two mammae, besides the other distinguishing marks on the face, ears and flanks, peculiar to the gazelline group; but on comparing these most prominent features with those assigned to the several species included under the gazelles in GRIFFITH'S translation of the Régne animal, it does not strictly accord in all of its specific or even in some of its subordinate characters with any one there described. I have consequently left it for future scrutiny rather than hazard an incorrect name.

As it is not known from what exact locality it was obtained, and the generic characters being less prominently set forth in the females of most animals than in the other sex, it must be reserved till we are fortunate enough to procure the male animal ere its place in systematic arrangement can be accurately determined. Its death appears to have been occasioned by swallowing a long piece of woollen yarn, as a large coil of this material was found in the cavity of the stomach, and which must have offered a mechanical resistance to any food passing on through the natural passages.

Stomach and cæcum of the above animal—the former showing the usual complicated digestive apparatus peculiar to the Ruminantia.

Aquila Chrysaetos. The ring-tailed Eagle (variety); presented by the curator and mounted in the museum.

This magnificent bird was shot by a native shikaree at *Tardak*, a village in the vicinity of the salt-water lake. It is a large and powerful raptorial bird, possessing all the distinguishing and characteristic traits ascribed to the true eagles; and though evidently an old bird, it becomes a highly interesting object for comparison with a young living bird, apparently of the same species, in the Society's compound.

and which with another bird, since escaped, was presented by Mr. HOMFRAY, of Calcutta, who reared them from nestlings.

Noctua Cuculoides. The cuckoo-owl, figured and described in GOULD's elaborate century of the Himalayan birds.

Phaenicura leucocephala. The white-headed Phaenicura, male and female.

Charadrius phivalis. The Golden Plover, male and female.

Chloropsis Malabaricus. Malabar Chloropsis, (JARDINE and SELBY's Illustrations)—differing in some slight particulars (probably merely sexual) from the *Cyanopterus* of Nipal, a specimen of which was sent by Mr. HODGSON to the Society's museum, and again from a living variety now in the possession of the Curator, the habitat of which is Monghir.

Cinnyris Gouldia. GOULD's Sun-bird.

This beautiful little bird, which unfortunately is not a very good specimen, is named after the accomplished artist Mrs. GOULD, by whom the century is delineated, and is the only one of the kind in the Society's cabinet. It formed a part of Captain PEMBERTON's collection of birds from Bootan.

Fuligula Rufina. The Crested black pochard, male and female.

Replacing an inferior specimen of the male bird, already in the Society's museum.

Mareca Paciforhynchus. The Spotted-billed Wigeon male.

Mareca ? Wigeon. Unidentified for want of the male.

Fuligula Caryophyllacea. The Pink-necked duck. Replacing a bad specimen in the cabinet.

Fulica Atra. Common Coot, male and female.

Macroramphus..... ? long beak.

Although only one species (the *M. Grisens*) of this genus appears to be known, neither the plumage of our present specimen or the one already occupying a place in the Society's museum and ticketed *Grisens*, and which are both alike, agree with its description. I therefore withhold the trivial name, until I am fully satisfied of its identity with *Grisens*, or find it to be what I suspect it is—a totally undescribed bird.

Charadrius Arenaria. Sanderling, male and female. Corresponding with specimens from China.

Tringa..... ? Sand-piper, male and female.

Recurvirostra Avocetta. Common Avocet.

A young bird of the first year procured from the Calcutta bazar, where they are occasionally brought with wild fowl.

Columba Gouldia. China-tipped Pigeon.

Dacelo..... ? Kingfisher.

Apparently an undescribed bird, brought by Dr. HELPER from the Tenasserim provinces, and found in woods in the interior perched upon high trees. The ground color of the bird is deep ferruginous, marked with broad transverse black bands. Bill and feet scarlet.

Bucia Nipalensis. Nipal Bucia, male.

Falco Cerruleus. Coruleuscent Hawk, from the Tenasserim provinces; only one met with near Tavoy. It is very bold and pursues small birds. The natives assured Dr. HELPER that it is equally distributed throughout the country.

Dicurus Malabaricus. Malabar Shrike.

Cymborhynchus..... ? Broad Bill,

from the Tenasserim provinces, and gregative in the forests near Tavoy.

Sciurus Macrourus. Large-tailed Squirrel.

Paradoxurus—Indicus.

Cranium of the *Ovis Aries*—or *Patna* variety presented by the Curator.

The officiating Secretary presented the Report and documents of the Statistical Committee, and stated that the President of the Society was of opinion that it would be inexpedient to publish these papers in the separate form recommended by the Committee.

After some discussion, in which Dr. SPRAY and Mr. EWART advocated publication in a separate form, the question was referred to the Committee of Papers.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of November, 1888.

| Day of the Month. | Forenoon, 10 A. M. | | | | | | | | | | Afternoon 4 P. M. | | | | | | | | | |
|-------------------|-----------------------|--------------------|-----------|-------------|---------|--------------|---------------------|------------------|---------------|--------------|---------------------|-----------------|-------|------------|-------------|------------------|----------|-------------|---|---|
| | Atmospheric Pressure. | | | | | Temperature. | | | | | Hygrometry. | | | | | Aqueous tension. | | | | |
| | Old Stand. Barometer. | Height at 32° Fah. | River wa. | Well water. | Of air. | Wet bulb. | Differential Therm. | Hair Hygrometer. | By Dew-point. | By Wet bulb. | By Hair Hygrometer. | Rain on ground. | Wind. | Direction. | Force. | Aspect of sky. | Weather. | | | |
| 1 | 30.332 | 29.908 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 2 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 3 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 4 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 5 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 6 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 7 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 8 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 9 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 10 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 11 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 12 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 13 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 14 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 15 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 16 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 17 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 18 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 19 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 20 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 21 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 22 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 23 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 24 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 25 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 26 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 27 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 28 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 29 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| 30 | 30.328 | 29.907 | 81.1 | 79.6 | 82.1 | 69.5 | 10.4 | 11.4 | 78 | 65 | 55 | 56 | N. w. | 1 | 10 | clear. | 1 | N. w. | 1 | 1 |
| Mean. | 30.344 | 29.928 | 79.7 | 78.1 | 77.2 | 69.2 | 9.7 | 9.1 | 88 | 70 | 60 | 63 | Light | 11 | changeable. | | 11 | changeable. | | |

JOURNAL

OF

THE ASIATIC SOCIETY.

No. 84.—December, 1838.

I.—*An Examination of the Pált Buddhistical Annals, No. 5. By the Hon. GEORGE TURNOUR, Esq. Ceylon Civil Service.*

Having in the papers No. 3, and No. 4, given the lineage, as well as the account of the birth, of GOTAMO BUDDHO, as contained in these Buddhistical records, I now send you an analysis of the *Parinibbána-suttan*, which is the history of his final extinction, or death. It is the third *Suttan* of the *Maháwaggo* in the *Díghanikáyo* of the *Sutta-piṭako*. It consists of six *Bhánawárá*; and commences with the words "the following was heard by myself," being the introductory expression used by A'NANDO at the FIRST CONVOCATION, in propounding each of the *Suttáni* of the *Suttapiṭako* in that assembly.

This *Suttan* is perhaps the most interesting section in the *Piṭakatayan*. The fame of SÁKYA had, at the period of his death, been to a certain extent established; and the creed of that wonderful impostor had been then recognized in the central regions, at least, of India. It is justifiable therefore to infer, that a considerable portion of the incidents recorded, as far as they could be produced by human imposture, practised among a superstitious and credulous Asiatic population, actually took place. Whereas at the period of his birth, and even up to the time of his secession from a secular and domestic existence, the circle must have been restricted almost to his own family, within which alone the delusion of his predicted Buddhohood could have been fostered, and its pretended realization been recognized. No external co-operation, therefore, of a deluded populace could have been enlisted on an extended scale, till a more advanced stage of his pilgrimage. The account of the birth of BUDDHO given in the paper No. 3, must consequently, as regards its narrative of the superstitious enthusiasm

then prevalent, partake more largely of a fictitious character, than this narrative of his death does. I have given a literal translation of the most interesting passages, and a continuous precis of the rest of the *Suttan*, adding a note from BUDDHAGHÓSO's *Atthakathá*, wherever it afforded the means of throwing additional light on the narrative of the text.

This is, I fear, my last contribution to your Journal. In a few days I leave *Kandy* for *Colombo*. The duties of my new office, and my separation from the Buddhist pandits, and their libraries at this place, will prevent, for some time at least, the further prosecution of this examination.

Kandy, October 18, 1838.

The Maháparinibbána Suttan. The first Bháṇaváro.

The following was heard by myself. At a certain period, while BHAGAWA' was dwelling at the *Gijjhakúto* mountain, near *Rájagahan*, the *Mágadha* rāja, AJA'TASATTU, a descendant of the *Wédéhi* line, was meditating the subjugation of *Wajji* (confederation)*.

Thereupon the said *Mágadha* monarch AJA'TASATTU, the descendant of the *Wédéhi* princes, sent for the brahman WASSAKA'RO, who was the prime minister of *Mágadha*, and said: I must utterly annihilate these *Wajjians*, who are thus great (by their union among themselves), and powerful (by the efficiency of their martial institutions): I will destroy these *Wajjians*: I will utterly exterminate these *Wajjians*. Brahman, come hither. Wherever BHAGAWA' may be, thither proceed; and having found him, bow down with lowly reverence at the feet of BHAGAWA', on my behalf, and inquire whether, free from ailment and disquietude, he is in the enjoyment of his energies and health. Moreover thus address him. Lord! the *Mágadha* rāja AJA'TASATTU, the descendant of the *Wédéhi* line, has commanded me saying; bow down in lowly reverence at the feet of BHAGAWA', and inquire whether, free from ailment and disquietude, he is in the enjoyment of his energies and health. Lord! the said *Mágadha* rāja AJA'TASATTU, the descendant of the *Wédéhi* line, in his anxiety to subjugate the *Wajjians*, has vowed,—I must annihilate these *Wajjians*, who are thus great and powerful. I will destroy these *Wajjians*: I will utterly extirpate these *Wajjians*. Whatever BHAGAWA' may vouchsafe to reply, carefully retaining the same in thy mind, impart it to me: the *Tathágathá* never spake an untruth.

The brahman WASSAKARO, the prime minister of *Mágadha*, having attentively listened to the *Mágadha* rāja AJA'TASATTU, the descendant of the *Wédéhi* line, replied: Be it so, lord! and preparing superb conveyances, and mounting a magnificent vehicle, surrounded by these superb conveyances, he departed from *Rájagahan*.

Wheresoever the *Gijjhakúto* mountain might be, thither he proceeded. Having gone in his vehicle as far as he should go in a vehicle, then descending from his conveyance, he approached the place where BHAGAWA' was. Having approached him; he made his salutation to BHAGAWA'. The prescribed salutations having been made; and having carefully called to his recollection all that he ought to have borne in mind, he seated himself on one side of him.

* These rajas or rulers were of the *Lickchawi* dynasty; the capital of whose dominions called *Wajji*, was *Wésáli* (*Allahabad*). The union of the *Wajjian* states is stated to have consisted of a confederation of chiefs, or princes.

The brahman WASSAKAMO, the prime minister of *Māgadha*, who had thus seated himself aside, addressed BHAGAWA' as follows: Lord, GOTAMO, the *Māgadha* rāja AJA'TASATTU of *Wédéhi* descent, bows down reverentially at the feet of the Lord GOTAMO, and inquires whether, free from ailment and disquietude, he is in the enjoyment of his energies and health. The *Māgadha* rāja, AJA'TASATTU of *Wédéhi* descent, in his desire to subjugate the *Wajji* rulers, has thus vowed: I will annihilate these great and powerful *Wajjians*: I will destroy these *Wajjians*. On this occasion, the venerable A'NANDO was standing behind BHAGAWA', fanning him.

Then BHAGAWA' thus inquired of the revered ANANDO'. Hast thou heard, A'NANDO, that the *Wajjians* are frequently holding meetings, and that they are assembling in great numbers? Yes, Lord, I have heard that the *Wajjians* are frequently holding meetings, and that they are constantly assembling in great numbers. A'NANDO, as long as these frequent risings, and constant assemblings are kept up among the *Wajjians*, their schemes will be advanced. They will not be checked.

Hast thou heard A'NANDO, that the *Wajjians* are meeting in concert, and rising in concert, and that they are in concert making the requisite preparation? Lord! I have heard, &c.* A'NANDO as long as the *Wajjians* are rising in concert, are holding meetings in concert, and are making their requisite preparations in concert, so long will the objects they have in view be advanced. They will not be checked.

A'NANDO hast thou heard that the *Wajjians* are refraining from adopting that which had no (previous) existence; that they are abstaining from abolishing that which had been (formerly) established; and that they are adhering to the *Wajjian* institutions which were anciently constituted, upholding them? Lord! I have heard, &c. A'NANDO as long as the *Wajjians* shall abstain from adopting that which did not previously exist; from abolishing that which had been established, and shall adhere to whatever *Wajjian* institutions may have been anciently constituted, upholding them, the schemes of the *Wajjians*, A'NANDO, must advance, and cannot retrograde.

Hast thou heard A'NANDO that whatever number there may be among the *Wajjians*† of *Wajjian* elders, these *Wajjians* support, respect, reverence and obey them, conforming to what they hear from them? Lord! I have heard, &c. A'NANDO, as long as these *Wajjians* shall support, respect, reverence, obey and conform to what they hear from the elders among the *Wajjians*, the projects of the *Wajjians* must advance, and cannot be disappointed.

* Every answer is an affirmative repetition of the question.

† On this point, the *Aṭṭhakathā* contains this note.

In aforetime, the *Wajjian* rulers, on a person being brought and presented to them, thus charged "this is a malefactor" without at once deciding "he is a malefactor, dispose of him accordingly." They surrender him to the *Wissachhiya-samahattā* (chief judicial officers). Having examined him, if they conceive "this man is not a culprit," they release him. If they decide, "this is a malefactor" without awarding any penalty, they transfer him to the *Wohārikā* (learned in the customs or laws). They also having investigated the matter, discharge him, if he be innocent; but if he be guilty, there are certain officers called *Suttadhārā** (maintainers of the *suttan*) to whom they transfer him. They also inquire into the matter and discharge him, if he be innocent; but if guilty, they transfer him to the *Aṭṭhakūlakā*†. They also having observed the same procedure, transfer him to the

* Vide Journal of 1837, for a definition of the word *Suttan*.

† Literally "the eight castes or tribes." I can obtain no satisfactory explanation of the nature of the office held by these functionaries. It is inferred to be, a judicial institution composed of judges from all the eight castes.

Hast thou heard, A'NANDO, that the *Wajjians* do not submit to have their wives and damsels of respectable families forcibly taken (by their rulers)? Lord! I have heard, &c. A'NANDO! as long as the *Wajjians* shall not submit to have their wives and damsels of respectable families forcibly taken (by their rulers), the designs of the *Wajjians* must prosper, and cannot miscarry.

A'NANDO! hast thou heard that the *Wajjians*, whatever the number may be of the *Wajjian chétiyani** belonging to the *Wajjian* (rulers), whether situated within or without (the city), they maintain, respect, reverence and make offerings to them, and that they keep up without diminution the ancient offerings, the ancient observances, and the ancient sacrifices righteously made? Lord! I have heard, &c. A'NANDO, as long as the *Wajjians*, &c.

A'NANDO hast thou heard that to the *Arahantā* of the *Wajjians*, protection, security, and safety are most righteously provided, in order that the *Arahantā* who have absented themselves from their country might return; and in order that those who have returned to their country, may conveniently dwell there. Lord! I have heard, &c. A'NANDO as long as the *Wajjians*, &c.

Thereupon BHAGAWA' thus addressed the brahman WASSAKARO, the prime minister of *Māghada*: Brahman, at the time when I was dwelling at the *Sāradada Chétiya*, in *Wāśāli*, I propounded these seven imperishable precepts unto the *Wajjians* resident there. Brahman, as long as these seven imperishable precepts shall be maintained, and the *Wajjians* shall be observant of these seven imperishable precepts, the projects of the *Wajjians* must prosper, and cannot miscarry.

On being thus addressed, WASSAKARO, the brahman prime minister, replied: Lord GÓTAMÓ, if the projects of the *Wajjians* must prosper, and cannot miscarry by their observance of any one of these imperishable precepts, who can define the measure of their success, when they are observant of all the seven imperishable precepts. Lord GÓTAMÓ, consequently it only remains for the *Māghada* monarch, AJA'TASATTU, the descendant of the *Wédekha* line, either to propitiate by tributes, or to dissolve the compact which unites (these *Wajji* rulers), without engaging in war. Lord GÓTAMÓ, as we have important and indispensable duties to perform, we must therefore depart. Brahman, consult thy own convenience in that respect.

Thereupon WASSAKARO, the brahman prime minister of *Māghada*, greatly delighted at the discourse of BHAGAWA', and receiving his blessing, rising from his seat, departed†.

Séndapati (chief minister), he again to the *Upardjá* (sub-king); the *Upardjá* to the *rāja*. The *rāja*, inquiring into the matter, if he be innocent, releases him, but if he be guilty, he causes the *Pavétipattakāḍa* (book of precedents or usages) to be propounded. There it is written, to him by whom such a crime is committed, such a punishment is awarded. The *rāja* having measured the culprit's offence by that standard, pronounces a suitable sentence.

* The *Aṭṭhakathā* explains that *chétiyāni* are not Buddhistical shrines but *Yakkha-khettānāni* (edifices belonging to the *Yakkha* or demon worship); and yet the religion of BUDDHO had been established in *Wāśi* at this period.

† The *Aṭṭhakathā* gives the following particulars of the proceedings adopted by AJA'TASATTU, on the return of WASSAKA'RO to *Rājagaha*, which is omitted in the *Suttān*.

WASSAKA'RO returned to the *rāja*; and the monarch inquired—*Achāriyo*, what says BHAGAWA? He, repeating the declaration of the ascetic GÓTAMÓ, said: By no other means will the *Wajjians* be overcome but by propitiating with tribute, or dissolving the subsisting union. The *rāja* replied: by propitiating with tributes our elephants and horses will be diminished; we must get the better of them by breaking

Immediately after the departure of WASSAKARO the brahman prime minister of *Māgadha*, BHAGAWA', thus addressed the revered A'NANDO:—A'NANDO, depart; whatever the number of bhikkhus may be who are maintained for the welfare of *Rājaga-*

up their union: what shall we do? Mahārāja, in that case, raise some discussion in reference to the *Wājians* in the midst of your counsellors. Thereupon I shall observe to you: *Mahārāja*, what do you want with them? Let them occupy themselves with the agricultural and commercial affairs of their own (realm). Having offered this remonstrance I shall quit (the council). Thereupon you should say: what does this brahman mean by interdicting our discussion regarding the *Wājians*. In the forenoon of that day I shall send off some tribute to the *Wājians*. Contriving to intercept that, and bringing a charge against me, without either binding or flogging me, completely cut off all my hair. As I am the person by whom the ramparts and ditches of thy capital were formed, and as I know the strong and weak, the high and low parts (of thy fortifications), I will tell (the *Wājians*) that I am able to remove any obstacle you can raise. On your hearing that this scheme (has been adopted by them): say, let them come. All this the *rāja* acted up to.

The *Wājians* hearing of his (WASSAKA'RO's) departure (for *Wésāli*) some decided thus: if the brahman come, he should not be permitted to cross the river. Others again observed: he (AJA'TASATTU) has so treated him, because he advocated our cause. That being the case, they said (to the guards who went to stop him): fellows let him come. He proceeded on, and being asked by the *Wājians* for what misconduct he had been so treated, he explained what had been preconcerted. After observing it was most unjust that he should be so severely punished for so slight an offence they inquired: what office hadst thou there? He replied: I was there judicial minister. They rejoined: let the same office be filled by thee here. He most ably administered justice: and the youths of the (*Wāsi*) rulers attended him, to acquire their accomplishments.

He who had thus acquired the reputation of a virtuous character, on a certain day taking aside one of the *Lichchhavi* rulers (mysteriously) asked: do people plough a field? Yes, they do. By coupling a pair of bullocks together? Yes, by coupling a pair of bullocks together. Another (of the *Lichchhavi* rulers) having inquired: what is it the *Aśviniyo* has mysteriously been saying? and on its being explained to him, incredulous, he remarked: he will not confide the truth to me; and quarrelled with that person. The brahman, upon another occasion taking another *Lichchhavi* aside significantly asked: with what curry did you eat (your rice)? and said no more. Another having been told what was said; also incredulous, similarly quarrelled with that person. The brahman upon a subsequent occasion, taking another *Lichchhavi* aside, asked him in a whisper—art thou a mere beggar? He inquired: who has said so? and the brahman replied: that *Lichchhavi*. Again upon another occasion, taking another aside he inquired: Art thou a coward? and on being asked who said so? he mentioned the name of some other *Lichchhavi*. Thus by telling to one person that which no other person had ever said, in the course of three years, he so completely disunited these rulers, one from another, that no two of them would walk the same road together.

When matters had been brought into this state, he caused the tocsin to be sounded as usual. The *Lichchhavi* rulers disregarded the call saying: let the rich and the *culiant* assemble: (we are the *beggars* and *cowards*.) The brahman sent a mission to his *rāja*, saying: this is the proper time, let him come quickly. The *rāja*, on hearing this announcement, assembled his forces by the beat of drums, and set out. The *Wésālians* on receiving intimation thereof, beat the tocsin, proclaiming: let us not allow the *rāja* to cross the river. On hearing this call also, they refused

has assemble them all at the *Upaṭṭhāna** hall. The revered A'NANDO having replied : Be it so, lord ; and received this command of BHAGAWA', whatever the number of bhikkhus might be who were maintained for the spiritual welfare of *Rājagaha*, having assembled them all in the *Upaṭṭhāna* hall, wherever BHAGAWA' might be, thither he returned.

Having approached and bowed down to BHAGAWA' he stationed himself on one side of him. The revered A'NANDO, who had thus placed himself on one side, thus explained himself to BHAGAWA' : Lord ! the priesthood are assembled : Lord BHAGAWA', thou knowest whether this be the fitting time. Thereupon, BHAGAWA', arising from his seat, wheresoever the *Upaṭṭhāna* hall might be, thither he repaired. Having arrived there, he seated himself on the throne prepared for him.

The enthroned BHAGAWA' thus addressed the bhikkhus ; Bhikkhus, I will propound unto you the seven imperishable precepts : listen and unreservedly incline your minds thereto : I will now address you. The said bhikkhus replied, saying : Be it so Lord. BHAGAWA' then thus spoke.

Bhikkhus, as long as the priests meet frequently (for religious observances) ; and assemble in great numbers, the designs of the priests must prosper, and cannot be defeated.

Bhikkhus, as long as the priests shall hold these meetings, simultaneously, rise from them, simultaneously and unanimously discharge their sacerdotal duties, the designs of the priests must prosper, and cannot fail.

Bhikkhus, as long as the priests shall abstain from establishing that which has not been prescribed ; from abrogating that which has been established ; and shall, accepting the precepts (of Buddhism) as they are laid down, inculcate and maintain these, the designs of the priests must prosper, and cannot be defeated.

Bhikkhus, as long as the priests shall support, reverence, respect and obey those bhikkhus who are the elders of the priesthood, of great experience, venerable by their ordination, fathers of their fraternity, and chiefs of the sacerdotal body ; and shall learn from them that which ought to be acquired, the designs of the priests must prosper, and cannot miscarry.

Bhikkhus, as long as the priests overcome the desires which engender the wish for regeneration in another existence, the designs of the priests must prosper, and cannot miscarry.

Bhikkhus, as long as the priests delight to dwell in wildernesses (removed from the distractions of laical connection) the designs of the priesthood must prosper, and cannot miscarry.

Bhikkhus, as long as the priests shall keep their minds embued with pious aspirations, saying to themselves : may pious conforming teachers who have not already presented themselves yet appear ; and may those pious conforming teachers who have already come dwell in peace among us, the designs of the priests must prosper and cannot fail.

Bhikkhus, as long as these seven imperishable precepts shall be maintained among the priesthood ; and as long as the observance of these seven imperishable precepts shall continue manifested, the designs of the priesthood must prosper, and cannot fail.

to assemble, saying : let the *valiant* rulers go. Again the tocsin sounded, and proclamation was made : let us not allow them to enter the city : let us defend ourselves with closed gates. Not one answered the call. (*AJA'TASATTU*) entering by the wide open gates, and having subjected them all to great calamities, returned.

* *Upaṭṭhāna* is the hall or apartment in which BUDDHO has been accommodated in any *wihāro*. The hall here spoken of is an edifice at the *Gijjhakūṭa* mountain, where BUDDHO was then dwelling. *Gijjhakūṭa* is one of the hills that environ *Rājagaha* ; the other four are *Isigili*, *Webhāro*, *Wepulla*, and *Pandawa*.

In the same form of words BHAGAWA' proceeds to propound a second series of seven imperishable precepts, which are in substance—

1. As long as the priests, neither unduly longing for, nor addicted to, gratifications (in themselves allowable), shall abstain from excessive indulgence in them.

2. As long as the priests neither longing for, nor addicted to, idle talk, shall abstain from unprofitable gossip.

3. As long as the priests neither wishing for, or addicted to, an indolent (sleepy) existence, shall avoid an unprofitable life.

4. As long as the priests neither wishing, nor striving to avoid, meeting together in congregations, shall not evade meeting together in congregations.

5. As long as the priests neither wishing nor seeking to associate with evil-doers, shall shun the society of sinners.

6. As long as the priests neither desirous of, nor addicted to, forming the intimacy of sinners, shall abstain from becoming the friends of sinners.

7. As long as the priests do not relinquish the pursuit of the sanctification, (of *arahatthood*,) discouraged from their having met some trifling impediment, the designs of the bhikkhus, &c.

The third series of the seven imperishable precepts are: As long as the priests shall be endowed with faith; shall be influenced by a sense of shame; shall have no abhorrence of sin; shall be profoundly versed (in the tenets of their religion); shall be of unwearied perseverance; shall be of retentive memories; and shall be endowed with wisdom, the designs of the priests, &c.

The fourth series comprehend the seven *Bojjhangā*, or acquirements of doctrinal knowledge.

The fifth series consist of the seven *Sannā*, or recognitions.

The sixth and seventh series of precepts are of a mixed character, and could not be intelligibly defined without entering into an extensive detail inadmissible in this analysis.

The SUTTAN then proceeds:

"BHAGAWA', continuing to dwell there, at the *Gijjhakūṭa* mountain at *Rājagṛha* propounded largely to the priesthood, in a similar manner, his discourses on *dhamma*—explaining such is *sīlā*—such is *samādhi*—such is *pañña*—by acquiring *sīlā*, the gift of *samādhi* is realized, the fruit whereof is great: by acquiring *samādhi*, the gift of *pañña* is realized, the fruit whereof is great: by acquiring *pañña* the mind is completely rescued from the influence of sinful passions—which be these—the passions of sinful desires; the passion for life (by transmigration); the passion for heresy (arising out of instability of faith), and the passions engendered by ignorance.

"Thereafter BHAGAWA' having dwelt at *Rājagahan* as long as it was agreeable to him, he said to the beloved A'NANDO : A'NANDO, let us depart ; wherever A'mbatthikā*, may be, thither let us proceed. The venerable A'NANDO replied unto BHAGAWA', saying : Lord, be it so. Thereupon BHAGAWA' accompanied by a great concourse of bhikkhus proceeded to A'mbatthikā."

BUDDHO there discourses on the same topics, and then repairs similarly attended to *Nālandā†*, where he sojourns in the *Pāvāriko* garden. There SARIPUTTO, one of his two chief disciples, (MOGGALLANO being the other chief disciple,) observes to BUDDHO, that there had not existed, did not then exist, and would not ever appear hereafter, any one equal to, or greater than, BHAGAWA'. To which observation, SA'KYA replies at great length, attributing SARIPUTTO's ignorance on this subject to his powers of inspiration being more limited than his own ; and tells him that supreme Buddhā had existed before him, and would be manifested also in after ages. There also BHAGAWA' propounds, as at other places, the doctrines of his faith.

From *Nālandā* BUDDHO repairs to *Patiligāmo* with the same retinue, and dwells at the *Aśvathāgūrān‡* which is duly fitted up for him by the *Gahāpati* (the principal inhabitants of the place), to whom he explains the principles of *sīlān* and the fruits derived by its observance. At that period two great ministers of the king of *Māgadha*, SUMIDHO and WASSAKARO were building a (*Nagaran*) citadel in the village *Pātāl*, for the purpose of checking the *Wajjians*. BUDDHO there predicts that the village *Pātāl* is destined to become a great city ; announcing also that it is destined to suffer under the calamity of fire, of water and of treachery§. On hearing this prediction the two *Māgadha* ministers wait on BUDDHO to invite him to a repast at their residence. He accepts the invitation. The gate (of the city in progress of construction), and the ferry of the *Gangu*

* The *Aṭṭhakathā* explains that this is a royal garden situated near *Rājagahan*, so called from an excellent (*amba*) mango-tree which stood at its gate.

† Is stated to be distant from *Rājagahan*, one *yōjano*, (about 16 miles.)

‡ It would appear by the *Aṭṭhakathā* that *Pātāl* was an inferior town, or as the term implies, a mere village at this time ; and it is stated that the inhabitants of this village suffered great hardships and extortions, by being turned out of their houses, for a fortnight and a month at a time, to accommodate the officers and messengers who were continually passing and repassing between *Wesāl* and *Rājagahan*. To avoid these oppressions the inhabitants built this *Aśvathāgūrān* or rest-house in the middle of the town, for the accommodation of travellers.

§ The *Aṭṭhakathā* explains that a part of the town is to be destroyed by fire ; that a part is to be swept away by the river ; and a part by treachery and perfidy. A very comprehensive prophecy, the realization of some part of which was scarcely avoidable. Buddhists, however, point with exultation to the partial destruction of ancient *Palebothra* by the river.

he passes; obtain the name of the *Gótamo* gate and *Gótamo* ferry. The *Ganges* is overflowed at the time; and he and his disciples pass by miraculous means.

The Second Bhānawāro.

From *Pātīgāmo* BHAGAWA' attended by A'NANDO, and the same retinue of priests then repairs to *Kōtigāmo**, where he explains the nature of the *A'riyasachchāni* or the four sublime truths, as well as the nature of *silā*, *samādhi* and *pañña*. BUDDHO from thence repairs to *Nadikōgāmo*†, where, on being interrogated by A'NANDO as to the fate of certain sanctified and pious persons who had died in *Nadikōgāmo*, he reveals what their condition will be subsequent to their death, and propounds his sermon entitled the *Dhammadāro* or the *Dhammo* reflector, which is illustrative of his miraculous vision, on which all passing events are inevitably and invariably reflected, as on a looking-glass.

From *Nadikōgāmo*, BHAGAWA' proceeds to *Wésāli*; and takes up his residence in the *Ambapālī*‡ garden. He there preaches on the four *Satipatthānā*, of which the bhikkhus are to be observant. The *Suttān* then gives the following account of the interview that took place between BUDDHO and the courtesan to whom this garden belonged.

"The courtesan AMBAPĀ'LI having heard that BHAGAWA' had arrived in *Wésāli*, and was sojourning in her garden *Ambapālikāmo*, equipping a superb vehicle for herself, and magnificent conveyances (for her suite), setting out from *Wésāli*, proceeded to the garden, using these conveyances as far as they could be used; and the rest of the way, descending from the vehicle, she proceeded on foot, and waited on BHAGAWA'—Having approached and bowed down to him, she took her seat on one side of him. BHAGAWA' addressed the courtesan AMBAPĀ'LI, who was thus seated by his side, a discourse on *dhammo*. He confirmed her faith, comforted her, and made her steadfastly confide (therein). She who had been thus confirmed in her faith, comforted, and made steadfastly to confide (therein) addressed BHAGAWA' saying; Lord BHAGAWA', vouchsafe to accept the repast I shall prepare for thee, as well as thy disciples, to-morrow. BHAGAWA', by his silence, consented to accept the same. The courtesan AMBAPĀ'LI thereby understanding that the invitation was accepted by BUDDHO—rising from her seat, bowing down to him, and performing the *padakkhiṇā* (walking respectfully round him) thrice, departed."

* Its position is not described. *Koṭi* signifies end. As the end of the *rāja MAHAPANĀDO*'s palace was situated in that village, thence it is stated to have derived the appellation of *Kōtigāmo*.

† So called from a marsh near which the village was situated.

‡ This pleasure garden belonged to a female of high rank named AMBAPĀ'LI, one of the accomplished courtesans of *Wésāli*—a class of persons of great influence at that period from their wealth and mental accomplishments. There appears also to have been an office conferred by the rulers of *Wāji* on a female, designated the *nagarasūbhini-thānantarā*, which literally signifies "the chiefship of the beauties of the town." Vide *Mahāvanso*, p. XXXVI.

On her return to the town she meets the rulers of *Wésāli*, repairing to *Ambapāliwano*, gorgeously apparelled, and in superb equipages. Her suite compel them to make way for her, and she declines acceding to their entreaty to resign to them the honor of entertaining BUDDHO the next day; and BHAGAWA' himself, though solicited by these chiefs, adheres to his promise made to the courtesan. He attends accordingly, and he and his disciples are served with her own hands by the courtesan. After the repast, she takes her seat again on one side of him; and implores of him to accept the *Ambapāli* garden as an offering made to him and his disciples. The offering is accepted; and he preaches another sermon at her house.

From *Ambapāliwano* BHAGAWA' repairs to *Bélugámake**, and there calling his disciples together he tells them that as the season of *Wasso*† was at hand, they should disperse around *Wésāli*, according to the invitations they may have received from the resident priests, who were friendly to them; and that he himself would keep his *Wasso* at *Bélugámake*. The *Suttan* proceeds—

"Unto BHAGAWA', who was holding his *Wasso* there, a severe illness was engendered, producing agonies indicative of approaching death. He however, retained his mental faculties and his self-possession, without giving way to the disease. BHAGAWA' then thus thought: It is unworthy of me that such as I should pass into *Parinibbāna* without having assembled those who have assisted me, and without addressing myself to the priesthood: it is indispensable that I should submit to this trial with fortitude, maintaining my professions in regard to the transitory matters of this life."

From this sickness BUDDHO partially recovers, and is able to sit up in his pulpit. The rest of this *Bhānawāro* is occupied by a dialogue between BHAGAWA' and A'NANDO, expressive on the part of the priesthood, of their expectation that they may receive further instruction, and on the part of SA'KYA, of the assurance that he would not, like earthly teachers, withhold any thing; announcing at the same time, that at his advanced age of seventy, with the infirmities he was labouring under, his career was drawing to a close.

The third Bhānawāro.

Subsequently, on a certain morning, BHAGAWA' makes a pilgrimage in search of alms through *Wésāli*, and after his morning repast attended by A'NANDO, repairs for his noon-day rest to the *Chepālā*‡

* A village situated near *Wésāli*, so called from a tree of that name.

† The rainy season from July to November, during which the Buddhist priests are enjoined to abstain from pilgrimage, and devote themselves to stationary religious observances. The *Wasso* here described is the one of 544 before CHRIST. BUDDHO died the following year B. C. 543 in the month of *Wesakho*, (April-May.)

‡ It is not explained whether all these *chétiyāni* are situated in the *Wésāli*, or at different places.

chétiyo. BUDDHO there expatiates on the perfections of that *chétiyo*, as well as the *Wēdāli*, the *Udēni*, the *Gōtamā*, the *Sattambako*, the *Rakupatto* and the *Sārandado chétiyāni*; and explains that it is in the power of any BUDDHO, by his four (*idhi*) miraculous attributes, to prolong his existence even for a *kappó*, if, while sojourning at any of these places he is duly entreated thereto. MÁRO (*Death*) imperceptibly exerts his influence, and prevents A'NANDO from comprehending this exposition made by BHAGAWÁ, though repeated twice. A'NANDO then retires to the foot of a tree, disconcerted, and seats himself there.

Before A'NANDO had proceeded to any great distance, the impious MÁRO approaches BHAGAWÁ, and having approached him and stationed himself on one side of him, thus addressed him : Lord BHAGAWÁ, vouchsafe to realize thy *Parinibbānán* now. SUGATO, this is the appointed time for thy *Parinibbānán*. It has been declared so by thee, Lord BHAGAWÁ, on a former occasion*, &c.

BHAGAWÁ replies that his death is at hand; and that his *Parinibbānán* will take place in† three months. He then announces his resignation of all connection with this transitory state of existence, to prepare for his death, by chaunting this hymn. "Having voluntarily overcome his desire for this life, the Muni has vouchsafed to relinquish all that is transitory, connected either with his human or divine essence, casting his existence from him, like unto a victorious combatant who divests himself of his armour."

On his uttering this announcement, the earth quakes, miracles are manifested, and the music of the heavens ring; whereby A'NANDO, who was still at the foot of the tree, being roused, hastens to BHAGAWÁ. He inquires from him the cause and the import of an earthquake; BUDDHO and explains that "The great earth rests on water, the water is sustained by the wind, and the wind is supported by the air (or atmosphere); and when a storm prevails a natural earthquake is produced—this is the first cause; and the effect a great quaking of the whole earth. The second series of causes proceeds from the miraculous powers possessed by inspired persons; the third cause is the death of a Buddho elect in the *Tāwatinsa* heavens, to be regenerated in the

* The former declaration was made by BUDDHO at the close of the probational meditation of seven weeks when he attained Buddhohood at the Bo tree; on which occasion also Death urged him to close his career there. He then said he would not resign his mission till his disciples had been fully qualified for their duties; and his *dhammo* had been perfectly established.

† About the middle of January, B. C. 543, two months after the termination of *Wasso*.

life in which Buddhohood is attained ; the fourth cause is the birth of a Buddha ; the fifth cause is the attainment of Buddhohood ; the sixth cause is the proclamation of the supremacy of his faith ; the seventh cause is a Tathāgato's renunciation of his connection with this transitory existence ; and the eighth cause is his final *Nibbāna* : in the instance of each cause, the effect is the same, viz. : a quaking of the great earth."

BUDDHO then explains that there are eight classes of beings ; the *Kottiyo*, *Brāhmaṇo*, *Gahāpati*, *Sumano*, *Chatumahārājikā*, those of *Tāwatinsa*, those of MĀ'RO (death) and of BRAHMO ; and he relates how a BUDDHO is generated and fulfils his destiny in each.

He next explains the nature of the eight *Abhiḥhayatanāni*, and of the eight *Wimokkha* ; and informs A'NANDO of the interview he had had formerly with MĀ'RO, as well as on that day. The *Suttan* proceeds in these words.

" On this explanation being afforded, the venerable A'NANDO thus addressed BHAGAWA' : Lord BHAGAWA, ' vouchsafe to live a *kappo* : for the welfare of multitudes, for the happiness of multitudes, out of compassion for the world, and for the welfare and happiness of the *dēwā* as well as men : O SUGATO, live for a *kappo*.

" Enough A'NANDO, importune not TATHA'GATO. A'NANDO, the time is now past for making this entreaty of TATHA'GATO. A'NANDO, however made the same entreaty a second and a third time ; (and BUDDHO said) A'NANDO, dost thou believe in the Buddhohood of TATHA'GATO.

" Yes, lord.

" Then, A'NANDO, why dost thou now even to a third time afflict TATHA'GATO with unavailing importunity ?

" Lord, from thyself have I heard, and by thyself have I been taught, saying : A'NANDO, to whomsoever is fully vouchsafed the sanctification of the four *Idhipāḍā* should he desire it, he may live a *kappo*, or any part of a *kappo* ; and unto TATHA'GATO also is vouchsafed those four *Idhipāḍā*.

" Dost thou, A'NANDO, believe therein ?

" Yes, lord.

" Then, A'NANDO, in that case, the neglect and the fault is thine—for it occurred not to thee, when that revelation was made by TATHA'GATO, in the most solemn and public manner (at the *Chepāla chétīyo*), to comprehend the same, and to implore of TATHA'GATO, saying : BHAGAWA', vouchsafe to live for a *kappo*, for the welfare of multitudes, for the happiness of the *dēwā* as well as men : O, SUGATO, live for a *kappo*. What dost thou now, A'NANDO, still importune TATHA'GATO ? TATHA'GATO has rejected thy prayer twice : could he grant it on the third application ? In this matter, A'NANDO, most assuredly, both the neglect and the fault is thine."

BUDDHO then reminds A'NANDO of the various places, all which he names, where he had made this revelation to him before, and finally tells him that having announced that he is to die in three months that destiny cannot be altered. They next repair to the *Kuṣāgara* edifice, and BUDDHO delivers a solemn charge to the priesthood, which he concludes with these words :

" Bhikkhus, I am now addressing you (for the last time) : transitory things are perishable, without procrastination, qualify yourselves (for *nibbāna*). At no distant period unto TATHA'GATO *parinibbāna* will be vouchsafed. Within three months from this day, by death TATHA'GATO will realize *nibbāna*.

" Thus spoke BHAGAWÁ, and having so delivered himself, the divine teacher of happy advent again spoke saying : My age has attained the fullest maturity : the remnant of my existence is short : I shall depart, separating (myself) from you, and having earned the salvation of my own (*attá*) soul. Bhikkhus, unremittingly embuing your minds with faith, lead the life of the righteous ; and keeping your thoughts under entire subjection, carefully watch over the aspirations of your minds. Whoever steadfastly adheres to the tenets of this *dhamma*, escaping the eternity of transmigration, will achieve the extinction of misery."

The fourth Bhanáwáro.

The next morning BUDDHO enters the city of *Wésáli*, robed, and carrying his begging dish in his hand ; and having made his afternoon meal, he surveys with an elephant* look *Wésáli* for the last time, and departs attended as before to *Bhandugámo*. There BHAGAWÁ assembles the priesthood, and explains to them the nature of *sílan*, *samádhi*, *paññá* and *vinutti*. He then similarly preaches at *Ambagámo*, and *Jambugámo*.

BHAGAWÁ next repairs to *Bhūganagara*, delivers to the priesthood at the *A'NANDO chetiyo*, his discourses called the *Padésa Suttáni*, in which he inculcates on his audience, that they are neither to be opinionated, nor hasty in the adoption of the opinions of other priests : if any new doctrine is set forth, they are to examine it dispassionately, by reference to his own *winéyo* and *sutto*. If it accord with them, they are to adopt it ; if it differs from them, they are to reject it.

He then visits *Páwá*, tarrying in the *Ambawano* or mango grove, belonging to a goldsmith called *CHUNDO* who waits on BUDDHO, and invites him, as the *Wésáli* courtesan had done, to a repast the next day at his house in the city of *Páwá*. On reaching the goldsmith's house BUDDHO thus addressed him : *CHUNDO*, if any pork is to be dressed by thee, with it only serve me : serve to the priests from any other food or provision thou mayest have prepared. *CHUNDO* having replied : Lord, be it so : BHAGAWÁ again calls him, and says, *CHUNDO*, if any of the pork prepared by thee should be left, bury it in a hole—for *CHUNDO*, I see not any one in this universe, though inhabited by dewos, maros and brahmos, with their hosts of ascetics, brahmans, déwos and men, excepting TATHA'GATO, who would digest it, if he ate the same. *CHUNDO* accordingly buries the remnants of the pork.

* *Buddhá* and *Chakkawatti* rajas are peculiarly formed in the neck, which is said to consist of a single bone. They are obliged therefore to turn round like an elephant, to look at any object not immediately before them.

BHAGAWÁ then preaches to his host; and having gratified, edified and comforted him, he departs. He was soon after afflicted with a severe attack of dysentery, the expected and predestined result of eating pork,—which under this conviction he interdicted being given to any one else. He then decides on hastening to *Kusinára*, the city in which he is destined to realize his *nibbāna*. On his journey, feeling faint, he desires A'NANDO to prepare a seat for him off the main road, under the shade of a tree; and seated there he commands his disciple to bring him some water to quench his thirst. A'NANDO entreats of him to proceed a little further up the *Kukutthána* river, as at that spot "the stream had been disturbed by the passage of five hundred carts." BUDDHO however three times repeats his commands to A'NANDO to bring him that water. He obeys at last, which leads to a miracle being performed, whereby the muddy water is rendered perfectly clear. The owner of these carts is one PUKKUSO, a member of the *Mallawo*, royal race, and an ascetic of the fraternity of *Alarakálamo*, who was then on his road from *Kusinára* to *Páwá*; and he was following his train. He hears of BUDDHO being in the neighbourhood, and waits on him; and a discussion ensues between them, of the relative merits of *Alárokálamo* and of BUDDHO, at the conclusion of which, PUKKUSO bestows two (*Singiwannawattháni*) cloths of golden hue, one on BHAGAWÁ and the other on A'NANDO. The latter spreads his accepted offering also on the person of BHAGAWÁ, whose body "shines like a bright flame free from smoke or ashes." On the miracle being noticed by A'NANDO, BUDDHO explains that such is always the case with a TATHÁGATO on the day he attains Buddhohood, and on that on which he realizes *nibbāna*—and he adds: A'NANDO, in the last division of this night, at *Kusinára* in the grove of *sála* trees belonging to the *Malla* princes, the *parinibbāna* of TATHÁGATO will be realized, (while reposing) between two of those *sála* trees. Let us depart, A'NANDO, and repair to the *Kukutthá* river. The venerable A'NANDO replied: Lord, be it so.

Thereupon BHAGAWÁ, with a great concourse of bhikkhus repairs to the *Kukutthá* river, and descending to the stream and having bathed and drank there, and then landing on the opposite bank, he proceeds to a mango grove (on the bank of the river). There he enjoins A'NANDO to relieve CHUNDO, the goldsmith, from all apprehension of his death having been occasioned by the repast he had provided for BUDDHO, informing him of the rewards he had realized by that act of charity and faith.

The fifth Bhānawādro.

BHAGAWÁ then repairs to the *Uppawattana** grove of *sāla* trees, on the further bank of *Hirannawattiyá* river, near the city of *Kusinára*, accompanied by his disciples; and in his debilitated state he desires A'NANDO to prepare his bed for him between the *sāla* trees, placing his head to the north; on which he lays himself down on his left side. The grove was then in flowers to the ends of its stems, though not the blossoming season. These flowers descended spontaneously on his head, the host of déwas made the air ring with the music of the heavens, and showered down flowers, sandal, and other incense on him. BHAGAWÁ, noticing these preternatural recognizances of his Buddhohood, impresses on A'NANDO that the steadfast observance of his *dhammo* is an equally acceptable recognizance of him.

He then desires his disciple, UPAWANO, who was standing in front of him fanning him, to retire. This injunction leads to A'NANDO's asking why he sends him away; and he replies that the déwatá of the ten thousand worlds are then hovering in the air, and lamenting his approaching death, and that he ought not to be partially screened from their sight. A'NANDO then announces, that the bhikkhus are pouring in from all quarters to witness his *nibbānan*; and BHAGAWÁ remarks, that not only those who come to witness the birth, the attainment of Buddhohood, the promulgation of the supremacy of the faith, and the *nibbānan* of a BUDDHO, but even those who pray at the shrines that will be raised to him, will be born in heaven.

A'NANDO then inquires how priests should comport themselves in their sacerdotal intercourse with women; and how his disciples should dispose of his corporeal remains after death. He replies as to the former: A'NANDO, do not look at them. Having looked at them, lord, what should be done then? Do not speak to them, A'NANDO. Having spoken to them, what should be done then? A'NANDO keep thyself collected. As to his corporeal remains, he replies, that rajas and grandees of the land will attend to his funeral obsequies; and that his disciples need not afflict themselves in that respect. He states also

* BUDDHACHO'SO in his *Aññakathá* notices that the road from the bank of the *Hirannawattiya* river to the grove of *sāla* trees resembles that from the bank of the *Kalambo* river at *Anurádhapura* through the gates of the *Rájamātu* wiháro to the *Thúpárámo*; and that the *Uppawattina* grove was to *Kusinára* what the *Thúpárámo* was to *Anurádhapura*. He also mentions that so debilitated had BUDDHO become from his attack of illness, brought on by the repast he had partaken from CAUNDO, that he was obliged to rest twenty-five times, on the journey from *Páwá* to *Kusinára* although the distance was only three *gawutáni*, (about 12 English miles.)

that his cremation will be conducted with the same honours as that of a *Chakkawatti* rāja, which he thus describes: they wind a new cloth round the corpse; having wound it with a new cloth, they enclose it in a layer of floss cotton; having encased it in a layer of floss cotton, they bind that with another new cloth. Having in this manner enclosed a *Chakkawatti* rāja's corpse, in five hundred double layers (of cotton and cloth) and deposited it in a metal oil-chaldran, and covered it with another similar vessel, and having formed a funeral pile with every description of fragrant combustibles, they consume the body of a *Chakkawatti* rāja; and for a *Chakkawatti* rāja they build the *thūpa* on a rock where four principal roads meet. It is in this manner, A'NANDO, they treat the corpse of a *Chakkawatti* rāja. Whatever the form observed in regard to the corpse of a *Chakkawatti* rāja may be, it is proper, A'NANDO, that the same form should be observed in regard to the corpse of TATHĀGATO.

BHAGAWA' next dwells on the merits that are acquired by building *thūpa* over relics of *Tathāgata*, *Pachē-Buddha*, *Sāvaka*, and *Chakkawatti* rājas. A'NANDO then retires into the vihāra, to weep in private at the approaching death of BUDDHO; who sends for him, comforts him by the approbation of his past conduct, and the assurance that he will shortly attain arahathood. He then assembles the bhikkhus, and expatiates on the merits of A'NANDO, especially pointing out his former miraculous gifts, which are the attributes of a *Chakkawatti* rāja. A'NANDO thereupon thus implores of BUDDHO; Lord, let not BHAGAWA' realize his *parinibbānan* in this inferior town, which is an insignificant and a branch town; there are, lord, other chief cities which he should visit. BHAGAWA' realize his *parinibbānan* there. There are numerous illustrious tribes of *Khattiya*, *Brahmana* and *Gahapati* there. They are greatly devoted to TATHĀGATO—they will duly celebrate his funeral rites. Not so, A'NANDO—make no such proposition—and BUDDHO proceeds to reveal that *Kusindā* was once celebrated under the denomination of *Kusāvatthi*, then the capital of *Mahākusāvatthi* rāja, and to describe its grandeur at that period. He enjoins BUDDHO to enter *Kusindā*, and announce to the *Khattiya* princes, that in the last watch of that night TATHĀGATO is to realize his *nibbāna*, and to invite them to attend. A'NANDO obeys this command, accompanied by an attendant. He finds the principal inhabitants assembled at the *Saṅghagāra* *edā* (hall of assembly) on some other business; and the

* The *Atthakatha* requires this word to be rendered *gold*; but *edā* or *agga* is

† Literally rendered for "*Sakhanagara*,"

announcement of his mission leads to universal lamentation; and the people run through the town with dishevelled hair, and hands folded over their heads. The *Kusinārians* attend in such numbers on BUDDHO, that finding they cannot individually pay reverence to him, A'NANDO divides them according to their tribes, and each tribe bows down at once, with their hands raised over their heads; A'NANDO calling out at the time of their adoration—Lord, such a tribe with their sons, daughters and followers are bowing down at the feet of BHAGAWA' with uplifted hands. To these adorations BUDDHO makes no reply; and during the first division of the night A'NANDO completes the presentation of the *Malla* tribes of *Kusinārd*, by thus collectively presenting them in tribes. One SUBHADDO is then admitted into the presence of BUDDHO, for the purpose of having a doubt solved. This discussion terminates in SUBHADDO being ordained, and ultimately becoming an *arahat*. He is the last disciple ordained by GO'TAMO.

The sixth Bhāṇḍaro.

BHAGAWA' then thus addressed the beloved A'NANDO: A'NANDO, can there be, or has there been any precept of mine, not imparted unto thee by SATTHA' (the divine teacher)? No, SATTHA' there can have been none. If there be none such, A'NANDO, be it understood that whatever *dhammo* or *vinayo* may have been propounded or established by me for thee, the same, after my demise, is to stand in the stead of the divine teacher unto thee. A'NANDO, although the bhikkhus are now in the habit of addressing each other (indiscriminately) with the appellation *āvuso*, after my death this practice must no longer prevail among you. By a senior bhikkhu, a junior bhikkhu ought to be addressed by the appellation *āvuso** preceded either by his family or personal name. By a junior bhikkhu an elder bhikkhu ought to be addressed *bhante* (lord), or *āyasmā* (venerable). Let no well-disposed priesthood reject any of my precepts, whether they be trivial or important. A'NANDO, after my death, let the *brahmadanda* penalty be awarded to the bhikkhu CĀMUNNO.

Lord, what is the *Brahmadanda*? A'NANDO whatever any bhikkhu may have desired, that CĀMUNNO has been advocating: it is not proper that he should be spoken to, exhorted by, or communed with, by the bhikkhus.

BHAGAWA' then thus addressed the bhikkhus: Bhikkhus, should there ever unto any one bhikkhu be any doubt or incomprehensibility as regards either *Buddho*, *Dhammo*, *Saṅgho*, *Maggo*†, or *Paṭipaddā*, inquire (at once): do not reproach yourselves hereafter saying, although SATTHA' was personally present to us, we lost the opportunity of making our inquiry personally of him. On being thus addressed the bhikkhus remained silent. BHAGAWA' similarly exhorted them a second and a third time; and the bhikkhus still remained silent.

BHAGAWA' again exhorted them saying: Bhikkhus, if it be out of profound reverence for the SATTHA' that ye abstain from inquiring directly from him;—

* This term implies perfect equality, and as in the order of ordination one bhikkhu must be senior to another, an appellation implying equality applied by a junior to a senior *Upasampadā* is disrespectful and irreverend.

† *Maggo* is the road that leads to *nibbāna*, and *paṭipaddā* is the life of righteousness that ought to be observed on that road.

bhikkhus, let one confiding priest make the inquiry through another in whom he confides. Even on being thus conjured the bhikkhus remained silent.

Thereupon the venerable A'NANDO thus addressed BHAGAWA': Lord, this is miraculous: Lord, this is wonderful: I place implicit confidence in this congregation of bhikkhus: not even unto one bhikkhu is there any doubt or incomprehensibility in regard either to *Buddho*, *Dhammo*, *Sangho*, *Maggo* or *Paṭipaddā*. A'NANDO, it is thy faith that impels thee to make this declaration: the omniscience of TATHA'GATO is in the same manner conscious, that not even unto one bhikkhu is there any doubt or incomprehensibility in regard to *Buddho*, *Dhammo*, *Sangho*, *Maggo* or *Paṭipaddā*. A'NANDO, among these five hundred bhikkhus, even the last one, has attained the *Sotāpanno*,—the grace that rescues him from hell, and the sanctification that realises arahathood.

BHAGAWA' then addressed the bhikkhus saying: Bhikkhus, I am exhorting you (for the last time), transitory things are perishable: without procrastination qualify yourselves (for nibbāna). These were the last words of TATHA'GATO.

BHAGAWA' then became absorbed in the first *Jhāna*—*samāpatti*; passing from the first *Jhāna* he became absorbed in the second *Jhāna*; passing from the second *Jhāna*, he became absorbed in the third *Jhāna*; passing from the third *Jhāna*, he became absorbed in the fourth *Jhāna*; passing from the fourth *Jhāna*, he became absorbed in the *ākāśānandhāyatāna*; passing from the *ākāśānandhāyatāna*, he became absorbed in the *viññānandhāyatāna*; passing from the *viññānandhāyatāna*, he became absorbed in the *akincānandhāyatāna*; passing from the *akincānandhāyatāna*, he became absorbed in the *nēvasannāsanandhāyatāna*, and passing from the *nēvasannāsanandhāyatāna*, he became absorbed in the *sannawēdayitanirodhan*.

The venerable A'NANDO then thus inquired of the venerable A'NURUDHO: Lord, has BHAGAWA' expired? No, *evuso* A'NANDO, BHAGAWA' has not expired: he is absorbed in the *wēdayitanirodhan*.

From this *wēdayitanirodhan*, BUDDHO step by step descends again to the first *jhāna*, and again rises to the fourth *jhāna*. In the transition between the fourth and fifth *jhāna*, BHAGAWA' expired.

On BHAGAWA' attaining *parinibbāna*, at the instant of his realisation thereof, the great earth quaking, produced a terror that made the hair stand on end; and the music of the gods rang in the air. On BHAGAWA' attaining *parinibbāna*, at the instant of his realisation thereof, BRAHMA' SAHANPATI sang this *gāthā*: All living creatures shall relinquish their existence in this world, and in like manner, in this world the divine teacher, the incomparable, the being of felicitous advent and of power, the supreme BUDDHO, also dies.

On BHAGAWA' attaining *parinibbāna*, at the instant of his realisation thereof, SAKKO the monarch of the *dēvas* sang this *gāthā*: Things that are subject to reproduction and death being transitory are most assuredly perishable—having been produced they perish: it is a blessing to arrive at their extinction, (by the attainment of *parinibbāna*.)

On BHAGAWA' attaining *parinibbāna*, at the instant of his realisation thereof, the venerable ANURUDHO sang these *gāthā*: He no longer indicates inspiration and respiration as when living; the immaculate MUNI, whose aim was *nibbāna*, has expired. He endured the agony of death in the full possession of his mental faculties: those mental faculties expired like the extinction of a lamp.

On BHAGAWA' attaining *parinibbāna*, at the instant of his realisation thereof, the venerable A'NANDO sang this *gāthā*: When the all-perfect supreme BUDDHO expired, then there was a great terror—then the hair stood on end.

On BHAGAWA' attaining *parinibbāna*, of those bhikkhus who had not yet realized arahathood, some wept aloud, with uplifted arms—some sank (on the earth) as if they had been felled—and others reeled about, exclaiming : too soon has BHAGAWA' expired—too soon has SUGATÓ expired—too soon has the *chakku* (eye) closed on the world. But those bhikkhus who had attained arahathood, collectedly and composedly submitted themselves, saying : transitory things are 'perishable—how can we in this world obtain it (permanency).

The venerable ANURUDHO then addressed the bhikkhus : A'wuso, enough—grieve not—bemoan not—Why, has it not been emphatically declared by BHAGAWA' himself saying : even amidst every community of happy and contented persons, various destructive and changeable issues come to pass. A'wuso, how can we in this world obtain it (permanency). It is not by merely saying of any thing born or otherwise produced, which from its perishable nature, is transitory—"most assuredly it perishes not,"—that it will come to pass. A'wuso, the *déwatá* are reproaching us (for our lamentations). (The bhikkhus inquired), Lord, does the venerable ANURUDHO discern the *déwatá*? Yes, A'wuso A'NANDO, the *déwatá* are looking down on earth from the skies : with dishevelled hair they are weeping ; and with uplifted arms they are bewailing—they are falling as if felled, and reeling about, they are exclaiming : too soon has BHAGAWA' expired—too soon has SUGATÓ expired—too soon has the *Eye* closed on this world.

The *Suttan* repeats in regard to the *déwatá*, what has been said of the bhikkhus, as to a portion having attained arahathood, and others not having acquired that sanctification ; and describes the different manner in which each bore the loss of BUDDHO.

The remainder of that night the venerable ANURUDHO and the venerable A'NANDO passed in discoursing on *dhammo*. Then (at the dawn of day) the venerable ANURUDHO thus addressed the venerable A'NANDO : A'wuso A'NANDO, depart : entering *Kusināra*, warn the *Kusinārian Malla* tribes, saying : descendants of *Wesettho*, BHAGAWA' has realized *nibbāna*. Know ye that this is the time for the performance of your (allotted) part. The venerable A'NANDO, replying : Yes, lord. Pursuant to that direction, early in the morning, arraying himself, and taking his robes and begging-dish with him, attended by a second person, he entered *Kusināra*. At that moment the *Kusinārian Malla* tribes were gathered together in their assembly hall, in consequence of this very circumstance. Wherever that assembly hall of the *Kusinārian Malla* tribes might be, thither the venerable A'NANDO proceeded ; and thus addressed the *Kusinārian Mallians* : Descendants of *Wesettho*, BHAGAWA' has achieved *parinibbāna*. Know ye that this is the time for the performance of your (allotted) part.

On hearing this announcement of the venerable A'NANDO, the *Mallians*, the *Mallian* youths, the *Mallian* damsels, and *Mallian* wives—afflicted, disconsolate, and oppressed with grief,—some wept with dishevelled hair, some bewailed, with uplifted arms—some dropt as if felled, and others reeled to and fro, exclaiming : Too soon has BHAGAWA' died : too soon has SUGATÓ died : too soon has the *Eye* closed on the world.

Thereupon the *Kusinārian Mallians* issued this command to their men : collect then in *Kusināra* garlands of flowers, and procure every description of musical instrument. Accordingly the *Kusinārian Mallians*, taking with them garlands of flowers, every description of musical instrument, and five hundred pairs of cloths—wherever the *Upavattana* *śāla* grove of the *Mallians* might be, there they approached the corpse of BHAGAWA'. Having approached the corpse of BHAGAWA'—with dan-

cing and vocal and instrumental music, and with odoriferous garlands, performing the prescribed offices, and rendering (every mark of) reverence, respect and submission, they employed themselves that day in suspending cloth-draperies, and erecting tented pavilions.

This thought then occurred to the *Kusinārian Mallians* :—The time is altogether insufficient to burn the corpse of BHĀGAWA' to-day : we will perform the cremation of BHĀGAWA' to-morrow. The *Kusinārian Mallians*, with dancing, and vocal and instrumental music, and odoriferous flowers performed the prescribed offices to the corpse of BHĀGAWA', reverently, respectfully and submissively ; suspending cloth draperies and erecting tented pavilions, and in this manner they passed the second day also. They in like manner occupied themselves, the third, the fourth, the fifth and the sixth day.

Then on the seventh day this thought occurred to the *Kusinārian Mallians* :—Hoping, unto the corpse of BHĀGAWA',—with dancing and vocal and instrumental music, and with sweet-scented flowers,—performed the prescribed offices, with reverence, respect and submission ; taking it out of the southern gate to the southward of the city,—and by the suburb (keeping to) the outside to the southward of the city, we will perform the cremation of the body of BHĀGAWA'.

Instantly eight *Mallian* chieftains, bathing from head (to foot), and clothing themselves in new raiment, said, we will bear the corpse of BHĀGAWA'. They, however, failed in their effort to lift it. The *Kusinārian Mallians* then thus inquired of the venerable ANURUDHO : Lord ANURUDHO, whence, and from what cause, is it that these eight *Mallian* chieftains, who, purified from head (to foot), and clad in new raiment, said : we will bear the corpse of BHĀGAWA'—have found themselves unequal to the effort of raising it ?—*Wācēthians*, your intentions and the intentions of the *dēwatā* are different. What, then, lord, is the intention of the *dēwatā* ? *Wācēthians*, your intention is this : we will carry the corpse of BHĀGAWA' with dancing, and vocal and instrumental music, and decorated with sweet-scented garlands, performing every requisite office reverently, respectfully, and submissively, through the southern gate to the southward of the city, and through the outskirts, keeping to the suburb on the southward of the town, will perform the cremation of BHĀGAWA'. But *Wācēthians*, the intention of the *dēwatā* is this : we, with celestial dance as well as heavenly vocal and instrumental music, decorated with odoriferous garlands, carrying the body of BHĀGAWA'—performing every prescribed office thereto, reverently, respectfully and submissively—through the northern gate to the northward of the city, and entering the town by the northern gate, and by the central gate, conveying it into the middle of the city, and departing out of the eastern gate to the eastward of the town, there, in the coronation hall, (*Makūṭabandhaṇa*) of the *Mallians*, we will perform the cremation of the body of BHĀGAWA'. Lord, whatever be the intention of the *dēwatā*, be it acceded to.

Instantly, every place in *Kusināra* which was a receptacle of dirt, filth and rubbish became covered knee-deep, with the celestial flower *maṇḍarā*—and the *dēwatā* as well as the *Kusinārian Mallians*, carrying the corpse of BHĀGAWA', with celestial and human dance, as well as vocal and instrumental music, and with odoriferous garlands, performing every requisite office, with reverence, respect and submission ; and conveying it through the northern gate to the northward of the city, and entering through the middle gate to the centre of the town*, and departing through the

* The *Aṭṭhakathā* notices that while the corpse was in the city, the princess *MĀLAKA*, the widow of *BANDHULO*, the late *Mallian* commander-in-chief, invested the corpse with her late husband's official insignia called *mahāsiṅṇa*, which jewels had remained unused from the time of his death.

southern gate to the eastward of the town, deposited the corpse of BHAGAWA' in the recreation hall of the Mallians.

The Kusinarian Mallians then thus inquired of the venerable A'NANDO: How, lord A'NANDO, should we dispose of the corpse of BHAGAWA'? Wasettijians, it is proper that it should be treated in the same manner that the corpse of a Chakkavattī rāja is treated. And in what manner, lord A'NANDO, should the corpse of a Chakkavattī rāja be treated?

A'NANDO here repeats the explanation that he himself had received from BUDDHA.

Thereupon the Kusinarian Mallians gave this order to their people: Fellows, collect for us Mallians some floss cotton; and then the Kusinarian Mallians wound the corpse of BHAGAWA' with a new cloth; having wound it with a new cloth, they covered it with a layer of floss cotton; having covered it with a layer of floss cotton; they again wound it with a new cloth; and in this manner having wound the body of BHAGAWA' with the five hundred pairs of cloths (which they had brought), and deposited it in a metal oil-vessel, covering it with another metal oil-vessel, they placed the body of BHAGAWA' on the funeral pile.

At that time the venerable KASSAPO was on his road from Pāvā to Kusināra, attended by a great priestly retinue, consisting of five hundred bhikkhus: and while the said venerable MAHA'KASSAPO was seated at the foot of a tree, having digressed from the road, a certain individual, who was on his way from Kusināra to Pāvā, passed, having in his possession some mandārā flowers. The venerable MAHA'KASSAPO observed him as he was journeying on, at a distance; and having recognized him, he thus accosted him: A'wuso, art thou acquainted with our SATTHA'? Yes, A'wuso, I was acquainted with him: the said ascetic GO'TAMO' died seven days' ago, and it is from that spot that these mandārā flowers were obtained by me. Thereupon among the bhikkhus who were there (with MAHA'KASSAPO), some who had not attained the sanctification of arahathood, wept with uplifted arms,—some dropt as if felled, and others reeled about saying: Too soon has BHAGAWA' died: too soon has SUGATA died—too soon has the Eye been closed on the world. But the bhikkhus who had attained arahathood, collectedly and composedly submitted themselves, saying: Transitory things are perishable: how can we in this world obtain it (permanency).

In that congregation, there was at that time one SUBHADDHO*, who had been ordained in his old age. The said SUBHADDHO who had been ordained in his dotage, thus addressed those bhikkhus: A'wuso, enough! weep not; bewail not; we are happily rid of that ascetic, (under whom) we were kept in subjection (by being told), this is permissible unto you—that is not permissible unto you—now, whatever we may desire, that we can do; and that which we do not desire, that we can leave undone.

Thereupon the venerable MAHA'KASSAPO thus addressed the bhikkhus: Enough A'wuso, weep not, bewail not; why! has it not been emphatically declared by BHAGAWA' himself, saying: even amidst every community of happy and contented persons, various destructive and changeable issues come to pass? A'wuso, how can we in this world realize it (permanency). It is not merely by saying of any thing that is born or otherwise produced, which by its perishable nature is transitory, most assuredly it perishes not,—that it will come to pass.

At this instant (at Kusināra) four Mallian chieftains, having purified themselves from head (to foot), and clothed themselves in new raiment, said:—We will apply

* His history is given at some length, in different portions of the *Atthakatha*—he had been a barber in the village A'tumā.

the couch to the funeral pile* of BHAGAWA'—but were not able to ignite it. Thereupon the *Kusindran Mallians* thus inquired of the venerable ANURUDHO: Lord ANURUDHO, whence, and from what cause, is it, that these four *Mallian* chieftains who are purified from head (to foot), and arrayed in new garments, and who have said: we will set fire to the funeral pile of BHAGAWA', have not been able to ignite it? Because, *Wessethians*, the intention of the *déwata* is different. Lord, what then is the wish of the *déwata*? *Wessethians*, the venerable MAHA'KASSAPO, attended by a great sacerdotal retinue, consisting of five hundred bhikkhus, is now on his way from *Pāwā* to *Kusindrá*, and as long as MAHA'KASSAPO shall not have bowed down, with uplifted hands, at the feet of BHAGAWA', so long will the funeral pile of BHAGAWA' resist ignition. Lord, whatever be the design of the *déwata*, be it complied with.

Thereafter, wherever the coronation hall of the *Mallians* might be in *Kusindrá*, thither the venerable MAHA'KASSAPO repaired to the funeral pile of BHAGAWA'. On arriving there, so adjusting his robes as to leave one shoulder bare, and with clasped hands having performed the *padakkhinā*, perambulation, three times, round the pile, he opened (the pile) at the feet; and reverentially bowed down his head at the feet of BHAGAWA'. The aforesaid five hundred priests, also, adjusting their robes so as to leave one shoulder bare, and with clasped hands, having performed the *padakkhinā*, perambulation, thrice round the pile, likewise, reverentially bowed down at the feet of BHAGAWA'. While the venerable MAHA'KASSAPO and these five hundred bhikkhus were in the act of bowing down in adoration, the funeral pile of BHAGAWA' spontaneously ignited.

It thus came to pass in regard to the corpse of the BHAGAWA' who was consumed by fire: neither his surface skin, nor his under skin, nor his flesh, nor his nerves, nor his muscles deposited any ashes or soot; none (of those parts) of his corpse remained (unconsumed). In the same manner that neither butter nor oil, which is consumed by fire, leaves either ashes or soot—so it came to pass in regard to the corpse of the BHAGAWA' who was consumed—neither his surface skin, nor his under skin, nor his flesh, nor his nerves nor his muscles left any residuary ashes or soot: none (of those substances) of his corporeal remains was left unconsumed. All the cloths, composing the five hundred pairs of cloths, were consumed. At the instant that the internal and external parts of the corpse of BHAGAWA' were absorbed, streams of water pouring down from the skies, caused (the flames of) BHAGAWA's funeral pile to be extinguished: the flame was thus extinguished by the down-pear on the top of the funeral pile of BHAGAWA'. The *Kusindran Mallians* also helped to extinguish the funeral pile by sprinkling every kind of scented water.

The *Kusindran Mallians* then forming a trellice work with lances, and fencing the place round with their bows (transferred) the remains of BHAGAWA' to the assembly hall† (within the town); and for seven days, with dancing and vocal and instrumental music, and with garlands of fragrant flowers, rendered every mark of respect, reverence, devotion and submission.

The *Māgadha* rāja AJA'TASATTU, the *Wédéhian* descendant, heard that BHAGAWA' had attained *parinibbāna* at *Kusindrá*; thereupon the said *Māgadha* monarch AJA'TASATTU, the *Wédéhian*, sent an embassy unto the *Kusindran Mallians*, with this message: BHAGAWA' was a *kattiyo*; and I am also a *kattiyo*. I am likewise worthy of possessing a portion of the corporeal remains of BHAGAWA'.

* This funeral pile was composed of sandal-wood, and was 120 cubits high.

† The *Aññakathā* gives a detailed account of the procession which transferred the bones of BUDDHO, still contained in the metal vessel in which he was burnt, from the coronation hall to the house of assembly.

WA. I will also erect a *thūpa* over the remains of BHAGAWA', and celebrate a festival.

The *Lichchhavis* of *Wésālī*, as being also of the kattiyo race; the *Sākya* dynasty of *Kapilawatthupura*, as the relations of BUDDHO; the *Balayo* of *Allakappa*, as of the kattiyo tribe; the kattiya dynasty of *Rāmagāmo*, as of the kattiyo tribe; the brahmans of *Wētthadīpo*, as being of the brahman tribe; the *Mallians* of *Pāvā*, as being of the kattiyo tribe;—all lay claim to a portion of the relics of BHAGAWA' in precisely the same terms as the message sent by AJA'TASATTU.

On being thus addressed, the *Mallians* of *Kusināra* thus replied to the assembly of emissaries: BHAGAWA' died within our territory: we will not give you any portion of his corporeal relics. On this answer being delivered*, the brahman *Dóno* thus spoke to the assembly of emissaries: Beloved, listen to this one observation I am about to address to you: Our BUDDHO was of a most pacific character; it is improper to raise a contest at the moment of the corporeal dissolution of so excellent a being. Beloved, let all of us, willingly, cordially and unanimously, divide the relics into eight portions: many nations are converted unto the Eye (BUDDHO)—let *thūpas* therefore be extensively built in different regions. They answered: Well, brahman, do then thyself carefully divide the relics of BHAGAWA' into eight equal portions. Replying; be it so, beloved;—the brahman *Dóno* according to the request of that assembly, carefully dividing the relics of BHAGAWA' into eight equal portions, thus addressed that concourse of emissaries: My friends, give me this *kumbhān*, (the vessel with which the relics were measured,) and I will erect a *thūpa* to that *kumbhān*†: and they gave that *kumbhān* to the brahman *Dóno*.

The *Mórians* of *Pipphaliwano* heard that BHAGAWA' had died at *Kusināra*; and thereupon the *Mórians* of *Pipphaliwano* sent an embassy to the *Mallians* of *Kusināra* saying: BHAGAWA' was a kattiyo; we are kattiya, and are also worthy of a portion of the corporeal relics of BHAGAWA': we will erect a *thūpa* over the relics of BHAGAWA', and celebrate a festival. They answered: there is no portion of the relics of BHAGAWA' left: the relics of BHAGAWA' have been divided: take from hence the charcoal of the funeral pile; and they accordingly did take away charcoal.

The *Mégadha* monarch AJA'TASATTU, the *Wédhian*, built a *thūpa* at *Rājagaha*n over the relics of BHAGAWA', and celebrated a festival. The *Wédhian Lichchhavi* built a *thūpa* at *Wésālī* over the relics of BHAGAWA', and celebrated a festival. The *Sākya*s resident at *Kapilawatthu* erected a *thūpa* at *Kapilawatthu* over the relics of BHAGAWA' and celebrated a festival. The *Allakappa Balayans* built a *thūpa* at *Allakappa* over the relics of BHAGAWA', and celebrated a festival. The *Rāmagamian Kśatriyas* built a *thūpa* at *Rāmagāmo* over the corporeal relics of BHAGAWA', and celebrated a festival. The *Wētthadīpian* brahmans built a *thūpa* at *Wētthadīpo* over the corporeal relics of BHAGAWA', and celebrated a festival. The *Pāvāyan Mallians* built a *thūpa* at *Pāvā* over the relics of BHAGAWA', and celebrated a festival. The *Kusinārian Mallians* built a *thūpa* at *Kusināra* over the corporeal relics of

* The uninjured bones were the following; the four canine teeth—the two collar bones—the frontal bone, with a long hair growing on it, which gave to that relic the appellation of the *rahasa* or hair relic. The rest of the bones were partially injured by the fire. The smallest atoms were reduced to the size of mustard seed; the middling atoms were of the size of half a grain of rice; and the larger atoms were of the size of half a grain of *suggu* seed.

† A measure containing 4 *alūkās*.

BRASAWA, and celebrated a festival. The Brahman *Dāśa* built a *thāpo* for the *kumbhān*; and the Pippalawarian Morians built a *thāpo* at Pippalawari over the charcoal, and celebrated a festival. Thus there were eight *thāpos* over the charred relics; a sixth over the *kumbhān*, and a tenth over the charcoal. This is the origin of this matter, (the erection of *thāpos*).

The relics of the Eye (BUDDAH) consist of eight *dānā*; seven *dānā* are objects of worship in *Jambudīpa*, and one *dānā* of the relics of the supreme personage, the *Nāga rājan* worship in *Rāmagāma*. One tooth is the object of worship among the *dānā* worshippers worshipped in the capital of *Gandhārā*; another in the kingdom of the *Kāśīgā* monarchs; the other the *Nāga* monarchs worship. It is by his providential interposition that this all-bountiful earth is regulated by the rulers on earth.

Thus unto the relics of CHAKKHU (the eye), by those by whom protection ought to be afforded, protection has been fully rendered: and as they (the relics) have merited offerings as well from the *dānā*, *nāgas* and kings, as from the great united mankind,—bow down therefore unto them with clasped hands;—for the *Rāmagā* do not appear even within the term of a hundred *kappā* (of each other).

The termination of the *Mahāparinibbāna-Sutta*.

The *Athakathā* explains, that before the close of AJĀTASATTA's reign, who survived BUDDHO twenty years, by the advice and instrumentality of MAHĀKASSAPO, all these relics, excepting the portion enshrined at *Rāmagāma*, were brought to *Rājagahan* for their better protection; where they were all enshrined in a great *thāpo* on the southeast quarter of that city. In the reign of PIYADĀ'OS, surnamed DHAMMĀSOKA, these relics were again dispersed all over *Jambudīpa*. The relics left at *Rāmagāma* were predestined for *Tambovanna*, and they were accordingly transferred to *Ceylon* in the reign of DE WANAN-PIYATISSO.—Vide the *Mahāwanso*.

II.—On the spontaneous heating of Brine. By G. A. PRINCE, Esq.

My experiments on the spontaneous heating of brine, which formed an article in the Journal of March last (page 207), have been followed up with a copious series of observations, of which the results will be found in the statements annexed. The present series commences for the most part from the time when (or soon after) the brine was first let into the reservoirs at my salt-works, and embraces, with two or three exceptions, the entire progress of the heating until its partial or complete subsidence. It is therefore remarkable, as the places of trial were also more numerous and the circumstances more various than before, that the maximum temperature observed is 21° Ft. less than in the experiments already brought to notice, and 26° less in the same place, being in the brine at *Naraynipo* 142° at the pump, and 137° by the probe in November 1837, and only 116° at the pump and 113° by

* This is the tooth subsequently transferred to *Ceylon*. 2

the problem in 1866, although the reservoir in question was filled under very similar circumstances both years, and with brine of nearly full saturation, to the depth of eight feet, the superincumbent of eight feet (in all sixteen feet) being however, when first filled up, much nearer saturation in 1867 than in 1866. But to this difference I attach less importance than to the more rapid extraction of the strong brine from below in June, July, and August, 1868, than in the corresponding months of 1867, when a large proportion of the strong brine remained in the reservoir till the end of the year. It is nevertheless remarkable that the maximum temperature in this reservoir, which so far exceeded that of any other in 1867, was in 1868 even less than the maximum at the bottom of a small reservoir (No. 2) at *Ballya Ghat*, containing only a small portion of strong brine not exceeding two-thirds saturation.

Altogether twelve deposits of brine at the several salt works have been subjected to trial, and, contrary to what might have been expected, the greatest heat (121°) has been found in the smallest mass; namely, in a small pool of *bittern* and salt drainings with superincumbent rain water in a hole dug for a well at *Ballya Ghat*: and this high temperature continued, rather increasing than otherwise, from the beginning of November to the middle of January, when the water was taken out. In all these deposits the brine remained the whole time undisturbed, except in No. 2 of the *Ballya Ghat* series, (till after the 22nd June,) and Nos. 4 and 5 of the *Narainpore* series, whence it was pumped out to supply the salt-boilers, the two latter from June to the 23rd September inclusive, and afterwards No. 5 during all November, and No. 4 from the beginning of December. In every one of them some heating may be discovered; for I now think the temperatures of 91° and 92° in the lower strata of No. 3 of the *Bhaota* series may be regarded as at least 2° or 3° higher than would have been found in an equal mass of fresh water at the same date. But it would seem that the heating scarcely begins to show itself till the saltiness of the water exceeds that of the ocean (S. G. 1026). It would also appear that the heating is most rapid where the greatest differences exist in the saltiness of contiguous strata of water; and that it is both accelerated and more quickly terminated by agitation. This will easily be perceived on comparing No. 2 of the *Narainpore* series with No. 1 and 2 of *Bhaota*, and Nos. 3 and 4 of *Ballya Ghat*; the very large diameter and smaller depth of the first causing the contents of that reservoir to be more affected by the wind than those of the other places named. Nevertheless, even in that large reservoir the lower strata, as far as four feet from the bottom, appear

to have undergone no change at all, with respect to the degree of saltiness, in seven months from June to January, when, (allowing for an error in the hydrometer which will presently be noticed,) the S. G. was found to be the same as when the water was let in at the end of May and beginning of June.

The tables I now exhibit shew the specific gravities as well as the temperatures in all cases in which the hydrometer was used, and may be thought unnecessarily voluminous on that account. But as the object is to give opportunity to investigate the cause of the heating, I have thought it advisable to suppress nothing; the S. G. columns, though some of them apparently mere repetitions, being to a certain extent a test of the manner in which the probe was charged. Nor have I omitted those trials which turned out unsatisfactory from the probe having been drawn up too soon, or in which error occurred, taking care however to insert a note thereof. The disparity in the number of joints of the probe filled at different trials, in the same depth of water, was owing to greater or less inclination of the instrument.

The probe used in these experiments, instead of the machine before described which was rather inconvenient to handle, was a thick bamboo with a hole cut across at the top of every joint, large enough to admit a small thermometer to try the temperature, and a small hole plugged at the bottom of every joint to draw off the water for trial by the hydrometer. By covering the large holes with soft paper and letting the bamboo remain in the water till the air bubbles (after the bursting of the paper) had ceased to rise, I have procured water of the different strata corresponding with the numbers of the joints, without mixture; but this method occupied so much time that I did not think it worth while to be so particular as to the degrees of saltiness, which consequently in the lower numbers will be found registered somewhat below their actual condition, the reduction being in proportion to the depth and specific gravity of the weaker brine near the surface. Each set of salt works was furnished with one of these probes. The *Ballys Ghat* probe was a bamboo with joints of nearly equal length throughout, averaging sixteen inches each. The joints of the *Blasts* and *Nerainpore* probes were more unequal, their several lengths being as follows respectively, measured from the bottom upwards.

| Basin. | | Reservoir. | |
|-----------|---------|------------|------------|
| No. | | No. | |
| 1 | 3 feet. | 1 | 11 inches. |
| 2 | | 2 | 11 |
| 3 | | 3 | 11½ |
| 4 | | 4 | 12 |
| 5 | 2½ | 5 | 12½ |
| 6 | | 6 | 13 |
| 7 | | 7 | 14 |
| 8 | | 8 | 15 |
| 9 | 2 | 9 | 15½ |
| 10 | | 10 | 15½ |
| 11 | 2 | 11 | 15 |
| 12 | | 12 | 15 |
| 13 | 3½ | 13 | 15 |
| 14 | | 14 | 15½ |
| 15 | 2½ | 15 | 16 |
| 16 | | 16 | 15½ |
| 17 | 2½ | 17 | 14 |
| 18 | | 18 | 13½ |
| 19 | 2½ | 19 | 12½ |
| 20 | | 20 | 13 |
| 20½ feet. | | 23 feet. | |

But great exactness in the specific gravity register during the whole period would have been impossible from the discovery of an error of .009 in the weight of the instrument on the 9th October, which quantity it had lost by constant use since the 17th May: the subsequent observations were corrected accordingly, and care was afterwards taken to compare the hydrometers at short intervals.

It remains for me to notice, that none of the masses of brine tested by the probe in the present series of observations, were under cover; that a fetid smell is usually given out by the brine when pumped up after it has been long in the reservoirs, and that the surface of the water in the long reservoir, No. 3, at *Ballya Ghat* was observed in February and March last, (being then in perfect repose and the depth of water being about 2 feet, the remnant of the supply let in before the rains of 1837,) to assume successively the colors of blue, green, brick-dust red and crimson, but returned to the ordinary appearance of water in a month or six weeks after these changes commenced. The surface of the brine in *Ballya Ghat* reservoir No. 1, the depth of which had been then reduced by *Soonies* to about five feet, was observed a about a week ago to be of a bluish lead colour which did not shew itself before the sponging commenced, and it gives out a strong fetid smell which also was not perceptible before.

Calcutta, 28th January, 1839.

Ballya Ghat.

1.—Reservoir 100 feet long, by 60 wide, and 18 deep when full; nearly empty till 1st June, when brine let in during a storm of wind and rain which filled it to 11 feet, and 5 feet more were let in on 5th and 6th June.

| No. | June 2.
11 ft. dp. | June 2.
T. S. G. | June 12.
ft. ins.
15 6 | June 25.
16 feet. | June 3.
T. S. G. | July 4.
ft. ins.
16 6 | July 15.
17 feet. | July 29.
ft. ins.
17 3 | Aug. 12.
ft. ins.
17 6 | Sept. 9.
ft. ins.
17 6 | Oct. 31.
18 feet. | Nov. 11.
17 feet. | Dec. 8.
ft. ins.
15 6 | Dec. 17.
ft. ins.
15 4 | Dec. 27.
15 feet. | Jan. 27.
5 feet. |
|-----|-----------------------|---------------------|------------------------------|----------------------|---------------------|-----------------------------|----------------------|------------------------------|------------------------------|------------------------------|----------------------|----------------------|-----------------------------|------------------------------|----------------------|---------------------|
| 1 | 84 1103 | 87 1110 | 88 1111 | 90 1106 | 88 1106 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 |
| 2 | 83 1104 | 87 1109 | 88 1110 | 90 1106 | 88 1106 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 |
| 3 | 83 1104 | 87 1109 | 88 1110 | 90 1106 | 88 1106 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 |
| 4 | 84 1104 | 87 1109 | 88 1110 | 90 1106 | 88 1106 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 |
| 5 | 83 1104 | 87 1109 | 88 1110 | 90 1106 | 88 1106 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 | 91 1105 |
| 6 | 83 1103 | 88 1108 | 91 1103 | 94 1100 | 97 101 1106 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 |
| 7 | 88 1103 | 90 1106 | 93 1102 | 95 1096 | 101 103 1100 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 |
| 8 | 89 1101 | 91 1103 | 93 1098 | 96 1091 | 104 104 1094 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 |
| 9 | and 9 ins. | 93 1063 | 93 1057 | 96 1054 | 99 103 1083 | 104 104 1094 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 |
| 10 | .. | 93 1063 | 93 1057 | 96 1054 | 99 103 1083 | 104 104 1094 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 |
| 11 | .. | 93 1063 | 93 1057 | 96 1054 | 99 103 1083 | 104 104 1094 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 |
| 12 | .. | 93 1063 | 93 1057 | 96 1054 | 99 103 1083 | 104 104 1094 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 |
| 13 | .. | 93 1063 | 93 1057 | 96 1054 | 99 103 1083 | 104 104 1094 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 |
| 14 | .. | 93 1063 | 93 1057 | 96 1054 | 99 103 1083 | 104 104 1094 | 105 103 1094 | 107 1091 108 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 | 103 103 1068 | 109 1083 107 | 108 101 1085 | 112 1085 101 |

Nos. 1, 2 and 3 reckoned fair trials, though in No. 3 the probe not steadily put down, but afterwards held firmly awhile to make the temperatures right. No. 4 some mixture in descending. No. 5 held more upright, but doubtful if it reached the bottom. No. 9 supposed half full before the top joint was pushed down. No. 10 not a good trial. No. 11 slow in putting down. No. 12 left some minutes in. No. 13 left 15 or 20 minutes in and a good trial. No. 14 half an hour in—good trial. N. E. When the S. G. is given for 2 joints together by circumflex, it denotes that the water obtained from the lower joint not being sufficient to float the hydrometer in the tin vessel employed for that purpose, the S. G. is the result of a mixture with water from the next joint. The Bbacia probe sometimes required the mixture of water from 3 or 4 joints of the lower numbers.

2.—Reservoir 130 feet long by 20 feet wide and 4 to 6 feet deep—filled 5th June.

| | 16th June.
54 ft. deep. | 4th July.
64 ft. | 15th July.
54 ft. | 29th July.
6 feet. | 12th Aug.
6 feet. | 9th Sept.
6 feet. | 6th Oct.
6 feet. | 20th Oct.
6 ft. 6 ins. | 31st Oct.
6 ft. 4 ins. | 17th Dec.
4 feet. | 17th Dec.
3 ft. 10 ins. |
|---|----------------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|---------------------------|---------------------------|----------------------|----------------------------|
| 1 | T. 106
S. G. 1100 | T. 105
S. G. 1052 | T. 106
S. G. 1095 | T. 105
S. G. 1095 | T. 105
S. G. 1095 | T. 119
S. G. 1140 | T. 117
S. G. 1140 | T. 101
S. G. 1093 | T. 100
S. G. 1093 | T. 89
S. G. 1045 | T. 89
S. G. 1045 |
| 2 | T. 97
S. G. 1079 | T. 96
S. G. 1078 | T. 96
S. G. 1078 | T. 96
S. G. 1078 | T. 96
S. G. 1078 | T. 93
S. G. 1063 | T. 93
S. G. 1063 | T. 88
S. G. 1052 | T. 88
S. G. 1052 | T. 80
S. G. 1035 | T. 80
S. G. 1035 |
| 3 | T. 94
S. G. — | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 93
S. G. 1063 | T. 93
S. G. 1063 | T. 88
S. G. 1052 | T. 88
S. G. 1052 | T. 80
S. G. 1035 | T. 80
S. G. 1035 |
| 4 | T. 93
S. G. — | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 93
S. G. 1063 | T. 93
S. G. 1063 | T. 88
S. G. 1052 | T. 88
S. G. 1052 | T. 80
S. G. 1035 | T. 80
S. G. 1035 |
| 5 | T. 93
S. G. — | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 93
S. G. 1063 | T. 93
S. G. 1063 | T. 88
S. G. 1052 | T. 88
S. G. 1052 | T. 80
S. G. 1035 | T. 80
S. G. 1035 |
| 6 | T. 93
S. G. — | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 93
S. G. 1063 | T. 93
S. G. 1063 | T. 88
S. G. 1052 | T. 88
S. G. 1052 | T. 80
S. G. 1035 | T. 80
S. G. 1035 |
| 7 | T. 93
S. G. — | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 91
S. G. 1056½ | T. 93
S. G. 1063 | T. 93
S. G. 1063 | T. 88
S. G. 1052 | T. 88
S. G. 1052 | T. 80
S. G. 1035 | T. 80
S. G. 1035 |

No. 1 the second joint registered as "not a good trial." This day the pump was lifting water from the bottom at T. 107 S. G. 1164, and on the 17th at T. 110 S. G. 1170, and on the 22nd at T. 110 S. G. 1107 in which day the fires were put out on account of the weakness of the brine. No. 10 some obstruction here prevented the probe from reaching the bottom.—N. B. the probe was not always put down in the same place in this reservoir.

3.—Reservoir 550 feet long by 30 feet wide and 5 to 7 feet deep,—about one-third full in May, and filled up 6th June to 6 feet, and a foot more in the rainy months.

| | June 17.
T. S. G. | July 4.
T. S. G. | July 15.
T. S. G. | July 29.
T. S. G. | Aug. 12.
T. S. G. | Sept. 9.
T. S. G. | Oct. 6.
T. S. G. | Oct. 20.
T. S. G. | Oct. 31.
T. S. G. | Nov. 11.
T. S. G. | Dec. 8.
T. S. G. | Dec. 17.
T. S. G. | Dec. 30.
T. S. G. |
|---|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|
| 1 | 97 1064 | 105½ 1059 | 103 1060 | 100 1059 | 104 1059 | 107 1059 | 109 1059 | 103 1046 | 103 1046 | 103 1046 | 94 1046 | 81 1038 | 91 1048 |
| 2 | 99 1060 | 106 1056 | 101 1057 | 100 1056 | 103 1056 | 105½ 1056 | 107 1051 | 101 1044½ | 101 1044½ | 100 1046 | 84 1046 | 75 1038 | 90 1048 |
| 3 | 96 1053 | 103 1056 | 97 1053 | 96 1056 | 98 1056 | 103 1056 | 103 1051 | 94 1046 | 94 1046 | 89 1036 | 80 1036 | 72 1036 | 79 1048 |
| 4 | 91 1045 | 93 1054 | 90 1053 | 94 1056 | 93 1056 | 97 1056 | 92 1056 | 88 1056 | 88 1056 | 85 1018 | 79 1018 | 72 1036 | 79 1048 |
| 5 | .. | .. | 88 1026 | 90 1025 | 90 1025 | 94½ 1025 | 91 1026 | 83 1026 | 82 1019 | 82 1018 | 78 1018 | 72 1034 | 79 1048 |
| 6 | .. | .. | 87 1025 | 89 1025 | 87 91 | 90½ | and 9 ins. | 81 1021 | 82 1021 | 81 1017 | 78 1017 | .. | 79 1048 |
| 7 | .. | .. | .. | .. | .. | .. | .. | 80 1020 | 81 1020 | .. | .. | .. | .. |
| 8 | .. | .. | .. | .. | .. | .. | .. | 79½ | .. | .. | .. | .. | .. |

No. 1 registered as "a good trial." No. 13 also "a good trial," and "left some time in." The probe was not always put in at the same place, and sometimes was slanted towards the middle, (the deepest part,) while at others (as in trial No. 2) it rested near the edge.

4.—A small pool in a hole dug for a well 10 or 12 feet deep—half filled in April with bittern thrown away from the boilers, and subsequently filled up by showers of rain carrying into it a little salt from the heaps of saline earth about, and some drainings of brine from the fires.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|----------|----------|--------------------------|----------|----------|---------|----------|----------|---------|----------|
| | Aug. 12. | Sept. 9. | Oct. 6. | Oct. 21. | Nov. 11. | Dec. 8. | Dec. 17. | Dec. 27. | Jan. 6. | Jan. 27. |
| | T. S. G. | T. S. G. | T. | T. | T. | T. | T. S. G. | T. | T. | T. S. G. |
| 1 | 96 1168 | 96 1179 | 103 | 110 | 103 | 111 | 107 1107 | 107 | 109 | 100 1129 |
| 2 | 97 1163 | 96 1175 | 105 | 110 | 107 | 116 | 111 1103 | 110 | 110 | 99 1157 |
| 3 | 99 1122 | 99 1159 | 110 | 112 | 115 | 118 | 116 1132 | 115 | 113 | 77 1098 |
| 4 | 100 1098 | 103 1146 | 113 | 114 | 119 | 116 | 117 1114 | 118 | 116 | .. |
| 5 | 99 1075 | 103 1125 | 112 | 108 | 118 | 100 | 116 1103 | 121 | 119 | .. |
| 6 | 95 1049 | 104 1095 | 108 | 103 | 110 | 85 | 116 1083 | 117 | 120 | .. |
| 7 | 92 1026 | 102 1077 | 101 | — | 91 | 81 | 92 1038 | 106 | 115 | .. |
| 8 | 89 1020 | 96 — | 97 | 93 | 91 | 80 | 73 1026 | 91 | 107 | .. |
| 9 | 88 1020 | 94 1034 | 97 | 87 | 81 | .. | 71 1025 | 84 | 92 | .. |
| 10 | 88 1020 | 93 1033 | 96 & 6 ins.
(91-1024) | 83 | 80 | .. | .. | .. | 83 | .. |
| 11 | .. | 91 1031 | .. | 82 | .. | .. | .. | .. | 81 | .. |
| 12 | .. | .. | .. | 81 | .. | .. | .. | .. | .. | .. |
| 13 | .. | .. | .. | 81 | .. | .. | .. | .. | .. | .. |
| 14 | .. | .. | .. | 81 | .. | .. | .. | .. | .. | .. |

No. 1 marked as "a pretty fair experiment—probe taken out as soon as filled." No. 2 decidedly better and marked as "sunk a foot deeper." No. 4 "more slanting than in former trial." No. 5 "a good trial." No. 6 supposed not to have reached the bottom. No. 7 a "fair trial." No. 8 "several minutes in," No. 9 probe "some time in." No. 10 "in, several minutes—good trial, say 3 feet deep."

Bhaota.

1.—Reservoir 150 feet diameter and first supplied with brine of half saturation to the depth of 1 foot on 18th May—and to 1 foot 8 inches of S. G. 1135 on 31st May, and to 9 feet for the most part of S. G. 1065 on 2nd June,—to 12 feet of ditto on 4th, and to 15 feet on the 5th and 6th June, the maximum depth in the rains being about 17 feet.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|----------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| June 3. | 8 feet. | June 4. | June 7. | July 29. | Sept. 11. | Oct. 7. | Oct. 27. | Nov. 6. | Nov. 16. | Dec. 1. | Dec. 9. | Dec. 17. | Dec. 24. | Jan. 16. |
| T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. |
| 1 90 | 91 | 90 | 90 | 96 | 98 | 101 | — | 93 | 100 | 105 | 102 | 101 | 101 | 98 |
| 2 89 | 96 | 1080 | 90 | 97 | 98 | 101 | 104 | 97 | 101 | 104 | 103 | 103 | 101 | 96 |
| 3 89 | 90 | 90 | 98 | 98 | 100 | 102 | 105 | 99 | 101½ | 103 | 102 | 102 | 100 | 94 |
| 4 89 | 90 | 90 | 98 | 98 | 100 | 104 | 105 | 99 | 101 | 101 | 100 | 100 | 97 | 91 |
| 5 90 | 1070 | 92 | 1070 | 99 | 100 | 106 | 104½ | 98 | 99 | 99 | 98 | 99½ | 93 | 90 |
| 6 90 | 92 | 1067 | 91 | 99 | 100 | 106 | 103 | 98 | 97½ | 98 | 96 | 94 | 87½ | 88 |
| 7 90 | 1067 | 93 | 1067 | 100 | 101 | 106 | 101½ | 97½ | 96 | 96 | 96 | 1063 | 82 | 84 |
| 8 90 | 1065 | 93 | 91 | 1067 | 101 | 106 | 101 | 97 | 97 | 96 | 94 | 82 | 80½ | 81 |
| 9 90 | 1065 | 93½ | 91 | 1065 | 101 | 106 | 101 | 97 | 96 | 95 | 93 | 78 | 80 | 80 |
| 10 90 | 1065 | 93 | 91 | 1062½ | 101 | 105 | 99 | 1053 | 94½ | 87 | 90 | 77 | 80 | 79 |
| 11 90 | 1065 | 92½ | 91½ | 1063 | 101 | 103 | 99 | 1053½ | 94 | 84 | 92 | 77 | 80 | 77½ |
| 12 | .. | 93 | 91½ | 98 | 100 | 94½ | 98 | — | 88 | 84 | 80 | 77 | 80 | 77 |
| 13 | .. | 93 | 1065 | 93 | 98 | 93 | 88 | 1029 | 83 | 81 | 80 | .. | .. | 78 |
| 14 | .. | .. | 91 | 90½ | 94 | 93 | 86 | 86 | 83 | 80 | 80 | .. | .. | 89 |
| 15 | .. | .. | 91 | 1040 | 90½ | 93 | 86 | 1029 | 83 | 80 | 80 | .. | .. | 89 |
| 16 | .. | .. | 91 | 1039 | 92 | 93 | 84 | 86 | 83½ | .. | 80 | .. | .. | .. |
| 17 | .. | .. | .. | .. | 88 | 93½ | 84 | 86 | 82½ | .. | 1041 | .. | .. | .. |
| 18 | .. | .. | .. | .. | 88 | .. | 86 | 86 | 83½ | .. | .. | .. | .. | .. |
| 19 | .. | .. | .. | .. | 88 | .. | 86 | 86 | 83 | .. | .. | .. | .. | .. |

No 2 during this trial water was brought up by a bottle from about a foot above the ground at the bottom of the Reservoir, of T. 89 and S. G. 1097. No. 3 "a good trial." No. 4 "not a very good trial, the probe having been lifted after being filled so as to raise the lower numbers and stick the top to No. 19 for half a minute." No. 7 "good trial." No. 10 "very little slant—left a few minutes in, and a pretty good trial." No. 12 "good trial—some minutes in." No. 13 "in, some minutes." No. 14 "very slanting, say 40°—half an hour in, and a good trial"—tried at 4 p. m. after a sunny day. N. B. probe put down at different places, always near the wall, and sometimes with considerable slant.

2.—Reservoir 54 feet long by 27 feet wide, never empty since May, 1887, and 1888, but filled to feet wide and 5½ to 6 feet deep; a foot of water let in 18th May, and 4 feet more 5th and 6th June.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 |
|----|---------|----------|-------------|----------|---------|---------|----------|-----------|----------|---------|
| | Oct. 7. | Oct. 21. | Nov. 5. | Nov. 16. | Dec. 1. | Dec. 9. | Dec. 24. | Sept. 11. | Oct. 21. | Nov. 5. |
| | T. | T. S. G. | T. S. G. | T. | T. | T. | T. | T. S. G. | T. | T. |
| 1 | 104 | 103 | 99 | 102 | 106 | 101 | — | 91 | 86½ | 86½ |
| 2 | 104½ | 103 | 101 | 104 | 106 | 102 | 101 | 92 | 86 | 86½ |
| 3 | 106 | 106 | 103 | 105 | 108 | 102 | 101 | 91 | 86 | 86 |
| 4 | 107 | 106 | 102 | 106 | 105 | 99 | 98 | 90 | 86½ | 85 |
| 5 | 108 | 104 | 101 | 105 | 99 | 95 | 95 | 90 | 84 | 85 |
| 6 | 107½ | 102 | 98 | 109 | 90 | 85 | 89 | 91 | 86½ | 85½ |
| 7 | 105 | 96 | 93 | 95 | 85 | 82 | 83 | 90 | 86 | 85 |
| 8 | 103 | 94 | 84 | 99 | 80 | 77 | 80 | 90 | 87 | 85 |
| 9 | 97 | 86 | 84 | 82 | 80 | 75 | 78 | 88 | 87 | 84 |
| 10 | 93 | 84 | 84 | 80 | 78½ | 75 | 77 | 88 | 86½ | 84 |
| 11 | 93 | 84 | 84 | 81 | .. | 75 | 77½ | 88 | 86½ | 84 |
| 12 | 93½ | 84½ | and 1 foot. | 81 | .. | 77 | 77 | 88 | 86½ | 84 |
| 13 | 93½ | 84½ | .. | 81 | .. | .. | .. | 88 | 86 | 84 |
| 14 | .. | 87 | .. | .. | .. | .. | .. | 88 | 86 | 84 |

No. 2 "good trial."

No. 2 "good trial." No. 4 "good trial." No. 5 "little slant, and left in a few minutes—a pretty good trial." No. 7 "in, some minutes, and more slanting than usual." No. 6 "good trial, some minutes in."

Narasimpoore.

1. Reservoir 150 feet diameter, half excavated to 16 feet and half to 6 feet deep—walled round the deep side : filled to 9 feet between the 12th and 15th June, to 15 feet by the 25th June, and one foot more during the rains.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|----------|----------|--------------|----------|----------|----------|----------|----------|----------|
| | Jan. 12. | July 24. | Sept. 11. | Oct. 7. | Oct. 21. | Nov. 8. | Nov. 16. | Dec. 1. | Dec. 18. |
| | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. G. |
| 1 | 83 | 99 | 93 | 95 | 88 | 90 | 89 | 80 | — |
| 2 | 89 | 92 | 93 | 96 | 94 | 92 | 89 | 89 | — |
| 3 | 88 | 93 | 93 | 96 | 94 | 92 | 89 | 92 | 94 |
| 4 | 88 | 93 | 94 | 97 | 94 | 93 | 90 | 92 | 94 |
| 5 | 88 | 95 | 95 | 100 | 94 | 94 | 92 | 94 | 95 |
| 6 | 89 | 95 | 96 | 101 | 95 | 95 | 93 | 94 | 97 |
| 7 | 90 | 95 | 97 | 102 | 94 | 96 | 93 | 94 | 98 |
| 8 | 90 | 98 | 100 | 101 | 98 | 97 | 95 | 94 | 98 |
| 9 | 89 | 92 | 101 | 100 | 94 | 97 | 95 | 94 | 98 |
| 10 | 89 | 93 | 102 | 98 | 97 | 96 | 97 | 95 | 100 |
| 11 | .. | 87 | 101 | 94 | 93 | 95 | 97 | 93 | 99 |
| 12 | .. | 88 | 97 | 91 | 89 | 92 | 96 | 93 | 91 |
| 13 | .. | .. | 91 | 91 | 74 | 87 | 92 | 84 | 80 |
| 14 | .. | .. | 90 | 90 | 79 | 82 | 83 | 78 | 75 |
| 15 | .. | .. | 90 | .. | 74 | 82 | 77 | 75 | 69 |
| 16 | .. | .. | and 6 inches | .. | 74 | 82 | 77 | 74 | .. |
| 17 | .. | .. | .. | .. | 74 | 82 | 77 | 73 | .. |
| 18 | .. | .. | .. | .. | 74 | 82 | 77 | 73 | .. |

No. 5 appears to have been tried in a hurry and therefore shows the temperatures (except near the surface) lower than they would have appeared if the probe had been suffered to remain a few minutes in. No. 8 registered as "soon taken out." No. 9 "fair trial." N. B. One foot let off between trials 5 and 6—1 foot more between 6 and 7—1 foot more between 7 and 8, and 2 feet between 8 and 9—the maximum depth being on the 21st October.

3.—Reservoir 250 feet long by 15 feet wide, filled to 6 feet deep between the 10th and 30th June, and a foot more by rain by the 21st October at the maximum.

| | August 4. | |
|----|-----------|-------|
| | T. | S. G. |
| 1 | 101 | 1075 |
| 2 | 103 | 1075 |
| 3 | 103½ | 1066 |
| 4 | 102 | 1057 |
| 5 | 99 | 1045 |
| 6 | 92 | 1032 |
| 7 | 90 | 1030 |
| 8 | 89½ | — |
| 9 | 89½ | 1030 |
| 10 | 89 | 1029 |

One side of this reservoir is walled, so that the water of the adjoining terraces passes freely over to the depth of a foot during the rains, at the maximum depth of water then on the latter.

2.—Reservoir 300 feet diameter, with 4 feet of last year's brine remaining in on 15th May of S. G. 1074: filled to 9 feet between 5th and 10th June, to 10½ feet by 24th July, and to 11½ feet (the maximum) by 21st October.

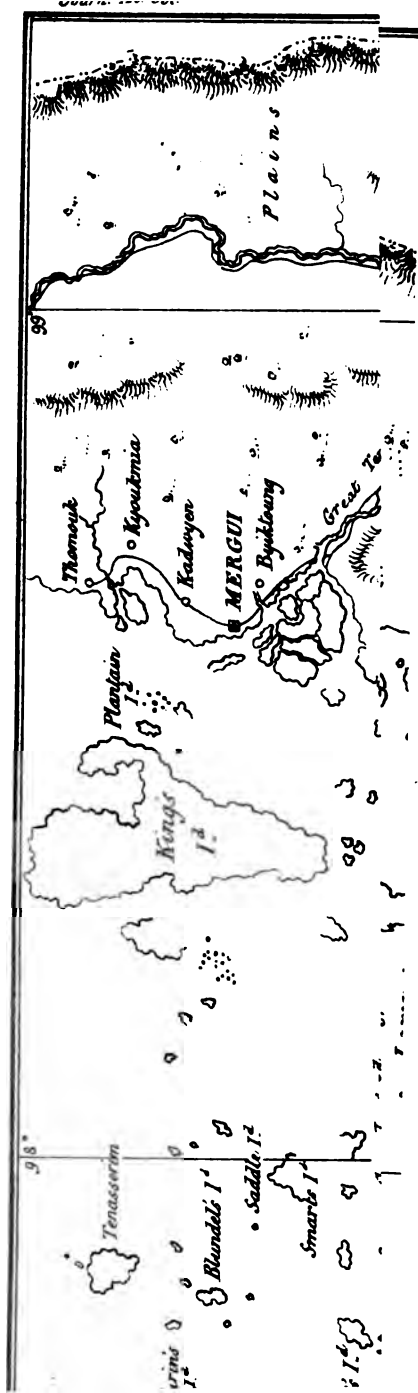
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----|-----------------------------------|-----------------------------------|---------------------------------|------------------------------|-------------------------------|---------------------|-------------------------------|-------------------------------|
| | July 24.
10½ feet.
T. S. G. | Sept. 11.
11 feet.
T. S. G. | Oct. 7.
11 feet.
T. S. G. | Nov. 5.
11-4.
T. S. G. | Nov. 16.
11-3.
T. S. G. | Dec. 1.
11
T. | Dec. 18.
10-8.
T. S. G. | Jan. 15.
10-5.
T. S. G. |
| 1 | 95 } 1085 | 106 } 1082 | 107 } 1086 | 97 } 1073 | 96 — | 92 } 1081 | 90 } 1080 | 92½ } 1081 |
| 2 | 97 } | 109 } | 107½ } | 97½ } | 97 1077 | 93 } | 91 } | 91½ } |
| 3 | 99 1085 | 109 — | 107½ 1086 | 98 } 1074 | 97 1076 | 93 1081 | 93 1081 | 91½ 1081 |
| 4 | 102 1085 | 110 1083 | 107½ } 1085 | 98 } 1075 | 97 1075 | 94 } | 93 1079 | 91 1080 |
| 5 | 103 1086 | 110 1080 | 107½ } | 99 1075 | 96 1075 | 93 } | 93 1079 | 91 1077 |
| 6 | 105 1086 | 106 1075 | 105½ } 1077 | 98 } 1074 | 94 1071 | 89 } | 91 1077 | 87 1069 |
| 7 | 104 1083 | 101 1064 | 100½ } 1063 | 93 1065 | 89 1058 | 84 } | 81 1064 | 80 1060 |
| 8 | 99 1075 | 101 1063 | 99 1058 | 92 1056 | 88 1053 | 80 } | 80 1059 | 78 1058 |
| 9 | 91 1069 | 93 1044 | 94 1047 | 90 1051 | 80 1039 | 77 } | 75 1067 | 76 1057½ |
| 10 | 90 1066 | 91 1037 | 92 1040 | 83 1036 | 80 — | 77 } | 75 1054 | 76½ 1056½ |
| 11 | 88 1065½ | 91 1036 | 91½ 1038 | 83 1034½ | 80 — | 77 } | 75 1050 | 76 1055 |
| 12 | 85 1037½ | 91 1036 | 91 1038 | 82½ 1035½ | 80 1040 | 76 } | .. | .. |
| 13 | 85 1039 | .. | .. | 82 1034 | .. | .. | .. | .. |
| 14 | 85 1040 | .. | .. | .. | .. | .. | .. | .. |

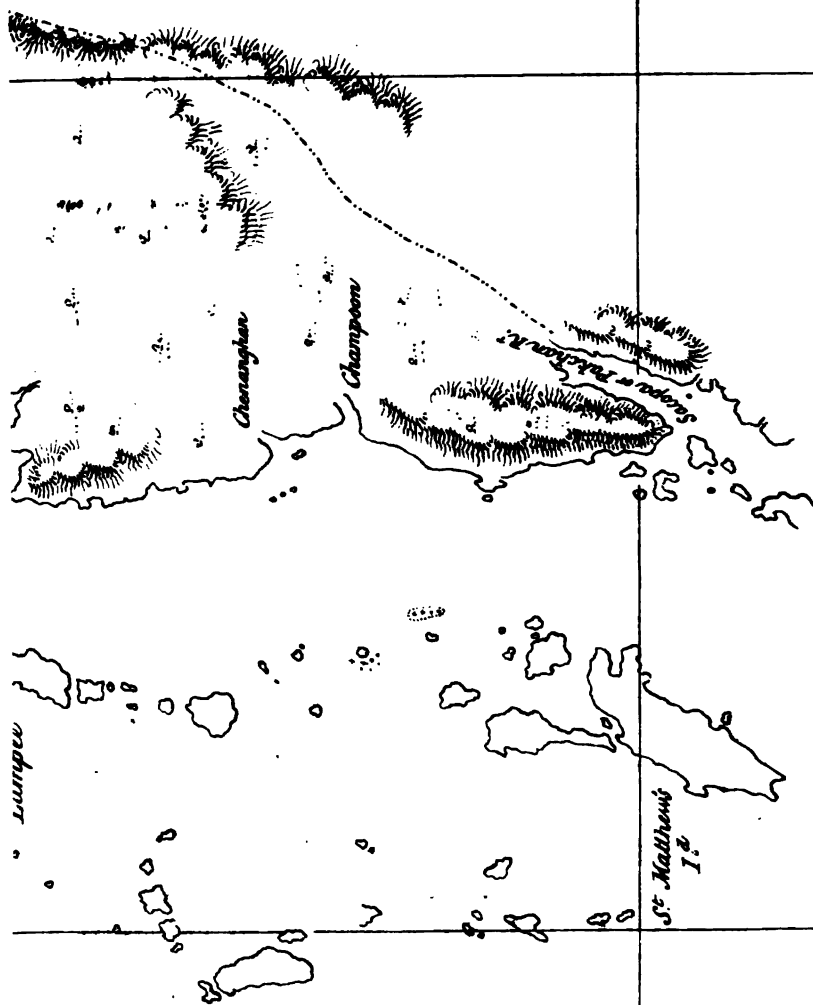
No. 7 the best trial, the probe having been "left in full half an hour." In the other trials, at this reservoir, it was generally taken out very soon after being charged. No. 8 a very good trial; the probe left in nearly two hours. Water taken from the surface was at the same time (10 A. M.) T. 73 S. G. 1053½.

5.—Reservoir 120 feet long by 40 feet wide, dry in March, 1 foot of water in at S. G. 1120 on 1st May, 1 foot of S. G. 1140 on 24th, and 8½ feet of S. G. 1197 on 31st May, 8½ feet 4th June, 7½ feet on 7th June, 11½ feet 10th June, (surface S. G. 1098,) 14½ feet on 26th June (surface S. G. 1085) and 15½ feet at the maximum in the rains.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|----------|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|----------|-----------|----------|
| May 26. | May 31. | June 4. | June 7. | July 16. | Sept. 11. | Oct. 7. | Oct. 21. | Nov. 5. | Nov. 11. | Nov. 21. | Dec. 1. | Dec. 18. |
| 6 feet. | 8 feet. | 9 feet. | 7½ feet. | 15 feet. | 15 feet. | 15 feet. | 15½ ft. | 15 feet. | 14 feet. | 12 feet. | 11½ feet. | 10 feet. |
| T. S. G. | T. S. G. | T. S. G. | T. S. G. | T. S. C. | T. S. G. | T. S. G. | T. | T. S. G. | T. | T. S. G. | T. S. G. | T. S. G. |
| 196 | 1185 | 98 | 97 | 96½ | 104 | 105 | 101 | 102 | 106 | 100 | 102 | 98 |
| 296 | 1182 | 98 | 98 | 97 | 105 | 106 | 102 | 106 | 106 | 103 | 103 | 1080 |
| 397 | 1184 | 98 | 98 | 99 | 108 | 108 | 105½ | 107 | 107 | 104 | 102 | — |
| 496 | 1181 | 98 | 98 | 99 | 106 | 109 | 105½ | 108 | 108 | 104 | 103 | 96 |
| 595 | 1183 | 98 | 99 | 100 | 107 | 108 | 105½ | 109 | 108 | 104 | 106 | 1067 |
| 695 | 1183 | 98 | 100 | 100 | 108 | 108 | 105½ | 109 | 108 | 104 | 106 | 1063 |
| 7 | 98 | 1206 | 101 | 101½ | 107 | 107 | 107 | 107 | 106 | 102 | 105 | 88 |
| 8 | 97 | 1203½ | 97 | 104 | 107 | 107 | 106 | 106 | 104 | 100 | 104 | 1047 |
| 9 | 89 | 1186 | 90 | 105 | 103 | 103 | 104 | 106 | 102 | 96 | 104 | 78 |
| 10 | .. | .. | 90 | 104 | 103 | 103 | 104 | 106 | 102 | 85 | 102 | 76 |
| 11 | .. | .. | .. | 104 | 102 | 94 | 91 | 88 | 94 | 85 | 77 | 74 |
| 12 | .. | .. | .. | 99 | 93 | 92 | 82 | 85 | 84 | 81 | 75 | 74 |
| 13 | .. | .. | .. | 97* | 90 | 90 | 80 | 83 | 84 | 79 | .. | .. |
| 14 | .. | .. | .. | 87 | 89 | 90 | 79½ | 83 | 85 | 79 | .. | .. |
| 15 | .. | .. | .. | * qr. 87. | 90 | 1027 | 80 | 83 | .. | .. | .. | .. |
| 16 | .. | .. | .. | .. | .. | .. | 80 | .. | .. | .. | .. | .. |

Nos. 9 and 10 registered as "fair trials." No. 11 "slow in putting down the first joints." No. 12 "very upright." No. 13 "fair trial."





in Trade

Calcutta

PUMP REGISTER.

Ballya Ghat. Brine Reservoir, No. 2.

| | | |
|-----------------|------------|--------------------|
| 16 June, T. 107 | S. G. 1164 | } from the bottom. |
| 17 " " 110 | " 1170 | |
| 22 " " 110 | " 1107 | |

Narainpore. Brine Reservoir, No. 4.

| | | |
|---|------------|----------------------------------|
| 10 May, N. W. pump T. 111 | S. G. 1171 | from 6 inches below the surface. |
| " " S. W. " " 112 | | from 1 foot ditto. |
| Total depth of water about 3 feet—surface T. 98 S. G. 1133. | | |
| 15 " N. W. pump T. 102 | S. G. 1104 | } fixed as before. |
| " " S. W. " " 116 | " 1170 | |
| 20 " " " 114 | " 1170 | |
| 22 " " " 108 | " 1180 | |
| 4 June, N. E. " " 102 | " 1196 | [face T. 92 S. G. 1153. |
| " N. W. " " 102 | " 1193 | |
| 7 " N. E. " " 103 | " 1193 | |
| 26 " " " 104 | " 1199 | |
| 16 July, " " 105 | " 1165 | |
| 24 " " " 105 | " 1198 | from 12 feet below surface. |
| 4 Aug. " " 108 | " 1148 | sunk a foot lower. |
| 11 Sept. S. E. " " 113 | " 1142 | |
| 9 Dec. S. W. " " 114 | " 1161 | } from near the bottom. |
| 18 " " " 110 | " 1152 | |
| 31 " " " 111 | " 1149 | |
| 15 Jan. " " 113 | " 1125 | |
| 21 " " " 114 | " 1117 | |

Narainpore. Brine Reservoir, No. 5.

| | | |
|---------------------------|-------------|--|
| 4 June, S. E. pump T. 101 | S. G. 1201½ | |
| 7 " " " 105 | " 1200 | |
| 26 " " " 101 | " 1158 | |
| 4 July, " " 102 | " 1118 | |
| 24 " S. W. " 103 | " 1128 | } from near the bottom. |
| 4 Aug. " " 104 | " 1126 | |
| 11 Sept. " " 105 | " 1187 | } sunk a foot lower, so as almost to touch the bottom. |
| 5 Nov. N. W. " 109 | " 1121 | |
| 11 " " " 108 | " 1107 | } about 6 inches from bottom. |
| 16 " " " 108 | " 1101 | |

III.—*A short notice of the Coast-line, Rivers and Islands adjacent, forming a portion of the Mergui Province, from a late survey. By Captain R. LLOYD.*

The outer islands lying off this coast, with part of the main land, were laid down by Captain D. Ross of the Indian Navy, from observations made between the years 1827 and 1830, and the result of the present survey has been to fill up the inner portion of it, to delineate the coast-line (with the exception of a very small and unimportant part) between the latitudes of 9° 50' N. and 12° 40' N., and to make a sketch of the *Tenasserim* river, or "*Tenanthari myi*" from its entrance up to the old town of that name.

Within these limits, the general features of the country are much the same as in the province of *Arracan*, being mountainous in the interior,

of irregular outline, and consisting of several ranges, clothed to their summits with large forest trees; the greatest elevation reached may be taken at about 3500 feet.

Between the southern limit and $11^{\circ} 46'$ N. the high land approaches in some parts very near to the sea, but from that latitude to the northern limit, it is fronted by a low delta of mangrove country, varying in breadth from 5 to 15 miles. Through this several small rivers have their course, and communicate with each other by creeks forming an inland navigation for boats; the outer portion of this country from being so low, and tide-washed, is unfit for purposes of cultivation, in its present state, and it is only in the inner part, where there begins to be a susceptible rise in the level towards the high land, that there are a few cultivated spots.

Within this delta or *Sunderbund* there are several small elevated ridges and isolated hammocks, covered with large trees growing upon a soil covering a rocky basis, and which at some remote period, appear to have been separate islands forming a portion of the archipelago, but are now united to each other by the accumulation of deposit brought down by the different streams from the higher grounds, and which seems to be gradually encroaching seaward. In this manner an island called "*Sellore*" has evidently become connected with the main by a narrow neck of land covered with mangroves and having two or three creeks intersecting it, and another one "*Kesserain*" appears to be approaching that state. These islands being large, and sheltering the inner waters, the tides set round both ends and meet in the middle, facilitating the deposit of sediment, and assisting this operation of nature.

Of the small streams above alluded to, the *Tenasserim* or "*Tan-thari* river" is the only one of any consequence, one branch of which discharges its waters at *Mergui*, and forms the harbour of that place, while the other disembogues about seven miles further to the southward: these two branches unite nine miles above *Mergui*, opposite a small village called *Tedawon*; here the features of the country begin to change from a low mangrove land to one of moderate elevation, and the river opens out into a lake of small extent, apparently the original mouth of it, in which are situated two or three small islands, and on either side are several hill pagodas and small villages which have a very pretty effect. At one of these "*Mounglaw*," on the left bank, there are extensive plains for rice cultivation, and beyond this, the country becomes mountainous to the very edge of the river, with a considerable narrowing of its bed: here and there however, there are spots of level ground which are occupied by small villages, whose occupants cultivate grain and other produce, little exceeding what is required for their own

PUMP REGISTER.

Ballya Ghat. Brine Reservoir No. 2.

| | | | | |
|----------|--------|-------|------|--------------------|
| 16 June, | T. 107 | S. G. | 1164 | } from the bottom. |
| 17 " | " | " | 1170 | |
| 22 " | " | " | 1107 | |

Narainpore. Brine Reservoir No. 4.

| | | | | | |
|---|------------|--------|-------|------|--|
| 10 May, | N. W. pump | T. 111 | S. G. | 1171 | from 6 inches below surface. |
| " | " | " | " | 112 | from 1 foot ditto. |
| Total depth of water about 3 feet—surface T. 98 S. G. 1133. | | | | | |
| 15 " | N. W. pump | T. 102 | S. G. | 1104 | } fixed as before. |
| " | " | " | " | 116 | |
| 20 " | " | " | " | 114 | |
| 22 " | " | " | " | 108 | |
| 4 June, | N. E. | " | " | 102 | 1180 ditto, depth of water 6 feet, surface |
| " | N. W. | " | " | 102 | [T. 92 S. G. 1153.] |
| 7 " | N. E. | " | " | 103 | 1193 |
| 26 " | " | " | " | 104 | 1199 |
| 16 July, | " | " | " | 105 | 1165 |
| 24 " | " | " | " | 105 | 1198 from 12 feet below surface. |
| 4 Aug. | " | " | " | 108 | 1148 sunk a foot lower. |
| 11 Sept. | S. E. | " | " | 113 | 1142 |
| 9 Dec. | S. W. | " | " | 114 | 1161 |
| 18 " | " | " | " | 110 | 1152 |
| 31 " | " | " | " | 111 | 1149 |
| 15 Jan. | " | " | " | 113 | 1125 |

Narainpore. Brine Reservoir No. 5.

| | | | | | |
|----------|------------|--------|-------|-------|------|
| 4 June, | S. E. pump | T. 101 | S. G. | 1201½ | |
| 7 " | " | " | " | 105 | 1200 |
| 26 " | " | " | " | 101 | 1158 |
| 4 July, | " | " | " | 102 | 1118 |
| 24 " | S. W. | " | " | 103 | 1128 |
| 4 Aug. | " | " | " | 104 | 1126 |
| 11 Sept. | " | " | " | 105 | 1187 |
| 5 Nov. | N. W. | " | " | 109 | 1121 |
| 11 " | " | " | " | 108 | 1107 |
| 16 " | " | " | " | 108 | 1101 |

III.—A short notice of the Coast-line, Rivers and Islands adjacent, forming a portion of the Mergui Province, from a late survey. By Captain R. LLOYD.

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Within these limits, the general features of the country are much the same as in the province of *Arracan*, being mountainous in the interior,

of irregular outline, and consisting of several ranges, clothed to their summits with large forest trees; the greatest elevation reached may be taken at about 3500 feet.

Between the southern limit and $11^{\circ} 40'$ N. the high land approaches in some parts very near to the sea, but from that latitude to the northern limit, it is fronted by a low delta of mangrove country, varying in breadth from 5 to 15 miles. Through this several small rivers have their course, and communicate with each other by creeks forming an inland navigation for boats; the outer portion of this country from being so low, and tide-washed, is unfit for purposes of cultivation, in its present state, and it is only in the inner part, where there begins to be a susceptible rise in the level towards the high land, that there are a few cultivated spots.

Within this delta or *Sunderbund* there are several small elevated ridges and isolated hammocks, covered with large trees growing upon a soil covering a rocky basis, and which at some remote period, appear to have been separate islands forming a portion of the archipelago, but are now united to each other by the accumulation of deposit brought down by the different streams from the higher grounds, and which seems to be gradually encroaching seaward. In this manner an island called "*Sellors*" has evidently become connected with the main by a narrow neck of land covered with mangroves and having two or three creeks intersecting it, and another one "*Kesseraing*" appears to be approaching that state. These islands being large, and sheltering the inner waters, the tides set round both ends and meet in the middle, facilitating the deposit of sediment, and assisting this operation of nature.

Of the small streams above alluded to, the *Tenasserim* or "*Tenanthari* river" is the only one of any consequence; one branch of which discharges its waters at *Mergui*, and forms the harbour of that place, while the other disembogues about seven miles further to the southward: these two branches unite nine miles above *Mergui*, opposite a small village called *Tedawon*; here the features of the country begin to change from a low mangrove land to one of moderate elevation, and the river opens out into a lake of small extent, apparently the original mouth of it, in which are situated two or three small islands, and on either side are several hill pagodas and small villages which have a very pretty effect. At one of these "*Mounglaw*," on the left bank, there are extensive plains for rice cultivation, and beyond this, the country becomes mountainous to the very edge of the river, with a considerable narrowing of its bed: here and there however, there are spots of level ground which are occupied by small villages, whose occupants cultivate grain and other produce, little exceeding what is required for their own

consumption. Four miles above *Mounglaw* on the right bank, a small branch or creek runs off to the northward, which after receiving the waters of several other streams, gradually enlarges itself until it falls into the sea three miles to the northward of *Mergui*, and forms the land on which that town is situated into an island. About nine miles further up on the left bank is a similar but rather larger offshoot the *Thuhwa*, which falls into the sea in $12^{\circ} 10' N$. Beyond this at the distance of about 14 miles is the old town of *Tenasserim*. It is situated where the river divides into two branches, the great and little *Tenasserim*, opposite to the point of confluence, and on the left bank of the latter. The river is 115 yards wide abreast of the town, and the depth of it in the latter end of May was three fathoms at low water in the centre of the stream: the rise and fall of tide at the springs was six feet, and it was high water at about three hours, the velocity of the stream was very weak, not exceeding one mile per hour. The natives describe the water as being fresh all the year round, and the surface of the river as being bodily raised about nine feet during the period of the freshes, (or from July to September.) The bed of the river is very variable and irregular both in tenacity and depth, and there are several shallows, and rocky patches; the high land too coming down in many places close upon its banks, renders it difficult to navigate; but small vessels, such as the river sloops of *Calcutta*, by waiting for the tide to drop up with, and to cross the different shallows, may be taken to *Tenasserim*, should Dr. HELPER's coal discovery render it necessary at any future period.

The position of *Tenasserim* has been very inaccurately placed in all our old maps, and its distance by the course of the river from *Mergui* is very much exaggerated; this may have been caused partly from the position assigned to the latter being that of two islands of the same name in latitude $12^{\circ} 12' N$. instead of the correct position of the town itself. During my visit to *Tenasserim*, the sun was too vertical to obtain a meridian altitude by artificial horizon, and the night was so cloudy and unfavorable that I failed in obtaining the latitude by a star. Captain MACLEOD however, whom I have reason to consider a good observer, made it in $12^{\circ} 6' N$. and using that latitude I made the longitude by chronometer 35 miles east of *Mergui*, or in $99^{\circ} 3'$ east, and by a sketch of the river it is 40 nautic or 46 statute miles from the entrance.

Whatever may have been its former extent and importance, it is now a very insignificant place, and I should think does not contain more than 100 houses and 4 or 500 inhabitants: nor does it bear much

appearance of former consequence, there being only two or three small pagodas, and the remains of an old brick outwork running along the top of a hill on the south side of the town. It produces but little for export, but the Shans bring a quantity of elephants' tusks and rhinoceros' horns for sale, and occasionally rubies and other precious stones may be procured but of inferior value; there is also said to be a considerable trade in gold dust, which with other traffic is in the hands of the Burmese and Chinese. During my visit here, the headman of the town was absent, and I could gain but little information.

The other rivers within this delta, and communicating with each other, are small, and unfit for the general purposes of navigation, and not being of any importance as leading to villages, it will be sufficient merely to enumerate them. They are the "*Wagyang-tung myit*," the "*Thakun*," the "*Nayasa myit*," "*Megyang-yathok myit*," "*Kaw go myit*," "*Kyauk phye myit*" and the "*Kopha neir myit*," ("myit" means river.) The opening to the last named is spacious, and receives the waters of *Linga* river or creek, which leads to a village of the same name, situated by native accounts about 30 miles up. There is here said to be an extensive country capable of being brought under cultivation, sufficient for the support of a much larger population, than the few Shans who inhabit it. I regretted much that I could not visit this place, as a correct delineation of its position might show it to be very near the coal fields of Dr. HANSEN which are in lat. $11^{\circ} 55'$ N. and long. $99^{\circ} 30'$ E.; and this leads me to doubt whether the locality in question, is in the British or Siam territory: for the point of the delta on the gulf of Siam side, is in lat. $12^{\circ} 10'$ N. and long. $100^{\circ} 10'$ E.; or only about 35 miles in a direct line from the coal site, whilst from the town of Cin situated in a more southerly direction, where the gulf of Siam is represented as having a deep course to the westward, it is only 26 miles.

The entrance to *Linga* river is in lat. $11^{\circ} 40'$ N. and long. $99^{\circ} 30'$ E., and off the opening leading to it and to the "*Kopha neir myit*," there is a spacious place for anchorage, to which vessels could have no difficulty in proceeding, and which I have called *Whale Bay*, from the circumstance of its being resorted to by numerous whales, and it is the only part of the coast where I have seen them.

To the southward of *Whale Bay*, the features of the coast begin to assume a different character; the shore is high and rocky close to the sea, with only occasional patches of mangrove in the vicinity of, or at the entrances of small rivers; here also the inland navigation ceases, for none of these streams so far as I could learn, have any communi-

dition with each other, and the boats proceeding to the southward
get outside.

In lat. $11^{\circ} 28' N$. there is rather a large opening in appearance called "*Kongun Wa*," which is said to reach a long way into the interior; it however suddenly contracts its breadth, and does not lead to any village. On a headland in lat. $11^{\circ} 23' N$. stands "*Chadon*," or "*Sading*," the only village which is situated on the sea coast; it is of recent origin, having been established by the exertions of Mr. Commissioner MAINGY, five or six years ago. This gentleman induced a Malay of some consequence with his followers to settle here, in hopes that it might serve to increase the population of the country, and bring it more extensively under cultivation. How far the good intentions of Mr. MAINGY have been realized is very questionable; for the Malays are far from being an industrious or agricultural people, and the head-man of the village, "*DATOO JUAN*," from his former mode of living was very unlikely to be the instrument of much good. The site which the old chief has selected for his village is ill chosen for agricultural pursuits, there being but little land in its immediate vicinity that could be brought under cultivation without much labor and expense, and the only advantage it seems to possess is a commanding and overlooking position towards the sea: it is however well adapted for fishing, by which the people principally subsist. It is true, there is the appearance of much exertion having been made at the first settling of the place, by felling large trees, and clearing away the ground, but the attempt has been given up as hopeless or distasteful, and all is growing into jungle again, except where the village itself is situated, which contains only about 50 houses and 200 inhabitants. "*DATOO JUAN*" is a carpenter by trade, and has built two or three boats of about 50 tons each, which he has finished in a very good style: they are ostensibly for the purpose of cruising amongst the islands, part of which he farms from government, for the purpose of collecting edible birds-nests, bich de mer, &c. and for taking the produce to *Penang* and other markets: but that he may have other objects in building these fine boats, is not unlikely, and that he still continues to have some turn for his old predatory habits, when time and opportunity may offer, I am rather inclined to suspect, and therefore during my employment in his neighbourhood I made a point of cultivating a good understanding with him, by making a few presents, which policy had its advantages, for the old man was always friendly, and ready in supplying me with such stock as his village afforded, and on one occasion in particular I should have been put to much inconvenience, had it not been for a timely supply received from him.

Four miles to the southward of *Sading* is the entrance to *Bokpur* creek leading to a village of the same name about seven or eight miles up. Here there is an extensive field for cultivation, and the soil is apparently rich, but the population (chiefly Shans), is extremely scanty, and is scattered over some extent of country in little villages, which together with those about *Linya*, may be estimated to contain about one thousand inhabitants. The people describe *Bokpur** as having been thickly populated at one time, and the country very extensively cultivated, and the appearance in its vicinity rather corroborates this: it is much to be regretted that there is not a more industrious and extensive population located here.

I attempted to ascend a high hill overlooking *Bokpur* accompanied by 20 or 30 Shans to cut a path, in order to obtain an extensive view of the coast and islands; for the purpose of fixing its geographical position more correctly, but it came on to rain in such torrents that I was obliged to give it up. The mouth of *Bokpur* creek is dry at low water for some distance seaward, and two or three miles from the entrance it divides into two branches, that to the southward leads to the village, off which it dwindles to a stream only 10 yards wide, with sufficient water for very small boats only. To the southward of *Bokpur* creek about 10 miles is a very extensive group of small rocky islands, most of which I have laid down, but what may be considered the coast line within them, I was unable for want of time to complete. The survey however is incomplete for a very small and unimportant space, about four or five miles only, where the high land approaches so very near the sea, that the streams, if any, only deserve the name of creeks. Proceeding on to the southward, and between the parallels of 10° 20' and 10° 30' N. are two small rivers which by information I obtained afterwards, are called "*Chenanghan*," and "*Champhoon*:" the latter or southern one appeared the largest, but this part of the coast having but few islands off it, and being much exposed to the sea during the S. W. monsoon, I was prevented doing more than fixing their entrances pretty correctly by means of angles as I passed. The latter stream is, I imagine, the *Sarannah* river of the old charts, up which I rather think there is a village called "*Champhoon*," where tin is produced. If so it may deserve inquiry whether there is here any communication with the river and place of the same name on the gulf of *Siam* side. There is no decided termination of the principal range of mountains, running along the *Isthmus*, into a low land, so as to favor such a conclusion, but when it is considered how deceptive the appearances of a country are when viewed from a distance it is impossible to say, until actual examination

* In the map this place is written *Boping* or *Bokpaling*.

of the locality takes place, that, like the *Tenasserim* river, winding their course round the base of hills and through a mountainous country, some of these streams may not so approximate to each other, as to make communication with the gulf of *Siam* side, easier and shorter in this part than in any other. The last and only river which I have to notice is situated opposite the island of *St. Matthews*, and which I consider to be the *Sa-kopah* or *Pak-Chan* forming the southern limit of our territory. Its entrance is in lat. $9^{\circ} 58'$ N. and, from the anchorage inside *St. Matthews*, it is completely hid from view by a group of small islands in shore. The extensive flat lying off the coast here, led me however to believe that there was a large opening in its vicinity, and I proceeded to examine the locality in the vessel's boat, when after crossing the flat and rounding the group of islands spoken of, I was gratified by coming suddenly upon the entrance to the river, which is a noble stream having 8 or 10 feet depth of water in it, and being about one and a half miles wide, for seven or eight miles up, beyond which I had not the means of continuing my examination. The direction of the river thus far was about N. N. E. or nearly parallel with the coast, and its course lay between two ranges of hills of 5 or 600 feet elevation. I am however rather disposed to think that the entrance to it will be found to be intricate; but further and minute examination may prove the contrary. That this river must be the one forming our boundary appears to me evident, as there is no other answering the description: but unfortunately I had no person on board who was acquainted with the locality, nor had I any interpreter, having been disappointed in both, by not being able to bring on a small tender and pilot I had engaged to accompany me, owing to the violence of the weather. Under these circumstances, even if it had come particularly within the object of my inquiry, it would not have been prudent, in a small open boat, to have continued my examination of the river up to the Siamese frontier town, which is said to be a place of some consequence, situated 30 or 40 miles up, nor could I have done so, in all probability, without incurring great risk of giving offence to the authorities by my intentions being misunderstood. I did hope to gain some satisfactory information from boats, but although we saw several, they viewed us with great suspicion, and evaded every attempt we made to communicate with them. Taking it for granted that this is the river forming the boundary between the British and Siamese territory, it is much further to the southward than the position generally assigned to it, and will account for the island and harbour of *St. Matthews* being considered as within our dominion.

The innumerable islands fronting this coast, and extending to the distance of 70 miles from it, exhibit a great variety of picturesque and wild scenery, the large ones rising in successive ranges of hills thickly wooded to their tops, with trees of a rich and varied foliage, present a most imposing and pleasing effect, whilst the small rocky ones, or birds' nest islands, with their rugged inaccessible sides, and irregular fantastic outlines, form a most remarkable yet not disagreeable contrast, the beauty of the whole being very much heightened during the rains by the numerous cascades and waterfalls that are interspersed amongst them.

Of the large islands forming a portion of the archipelago, those of St. Matthews and King's Island, situated near the two extremes, and remarkable for possessing excellent harbours, have been noticed by Captain Ross, and their locality is described by him : both these islands are mountainous, and of considerable elevation, being nearly 3000 feet high, but rising with a quick ascent from the sea, they present but little surface fit for cultivation.

Of the other large islands, those which have come more particularly within my observation, and which seem deserving of any notice, are *Sellors*, *Domel*, *Kesseraing*, and *Sullivan's* Island, the *Lampas* of the Burmese.

The two first are much the same in general character and feature, as King's Island and St. Matthews, but not so elevated, and inside both of these islands there is good anchorage for vessels, the one under *Sellors* would be very convenient for communicating with *Mergui* from the southward, or with *Tonasserim* by the *Thuk-see*. This I have taken the liberty of calling "*Auckland*" bay. *Sellors* is about fifteen miles long by two to four in breadth and extends from latitude $11^{\circ} 52'$ to $12^{\circ} 7' N.$

Domel is situated more to the westward, between the parallels of $11^{\circ} 25'$ and $11^{\circ} 50' N.$ and is twenty-five miles long by four broad ; and on the eastern side of three moderate-sized islands extending from the north end of it, there is another safe anchorage (*Morrison bay*) which might be resorted to if necessary, though not quite so convenient for communicating with *Mergui*. "*Kesseraing*" and "*Lampas*" both merit minute examination, which I was not enabled to give them. Of the latter, there is said to be a pearl bank, and the former is spoken of by the Burmese in high terms of praise, for the fertility of its soil : they have a tradition amongst them, of its having once been thickly populated, and it is said that there is still to be seen in the interior the ruins of an old town. I had no opportunity of ascertaining the truth of this, and although the face of the island does not corroborate the assertion, there appears no

for a probability of this island being superior to the others, that the general features of it although mountainous in parts, are more undulating and diversified in outline, and evidently present a greater proportion of moderately elevated and level land than the others. *Lampée* is eighteen miles long by seven or eight broad and extends from lat. $11^{\circ} 31'$ to $11^{\circ} 49'$ N., and inside of its south end is "Whale Bay" before spoken of; there is however no ingress or egress by the north end of the island, except to very small vessels, there being an extensive shallow flat between it and the main, caused by the meeting of the tides.

"*Lampée*" has also a very fine anchorage on its eastern side, so easy of access that the *Lady William Bentinck* surveying vessel succeeded in entering and obtaining shelter after dark, and there lay in perfect security during the continuance of some stormy weather which she was caught in amongst the outer islands in the month of August. This island is of a curiously-curved shape the pearl bank being situated somewhere on the south or concave side of it; the average breadth of the island is about two miles, the length thirty miles, and it is situated between the parallels of $10^{\circ} 40'$ and $11^{\circ} 0'$ N.: but the chart itself will best exhibit the extent and limits of this and the other islands both in latitude and longitude.

With the exception of one or two settlements near to *Mergui*, where a few people have established themselves for the purpose of cultivating gardens, and rearing mangosteens, dorianes and other fruits, and for fishing, there are no settled inhabitants on any of the islands; but there are roving tribes who pass from one island to another, living partly in their boats, and in temporary sheds, which they erect with a few sticks and leaves, on the little sandy beaches interspersed amongst the islands. They appear unacquainted with the art of cultivation, and subsist chiefly upon shellfish, turtle, and other productions indigenous to the islands, and the tortoise or rather "turtle shell," bich de mer, and other articles which they collect, they dispose of to the best advantage, and in return, for a little rice and coarse cloth on their visits to *Mergui* and other places.

They are to be found chiefly amongst the outer islands during the fine season, and on the setting in of the rains and fine weather; they return to the inner ones, and for the right to frequent and live upon the islands, I believe they pay a small tax to government, of one rupee per head annually. The term *chillone* is generally applied to them, but I have understood that there are three or four divisions or families of them, known under different names, according to the part of the archipelago, they confine themselves to: they are a harmless race, badly

clothed, miserable in appearance, and do not, I imagine, amount to more than a thousand persons altogether; they are found to be extremely shy of strangers, and avoided us on all occasions.

Having been employed at a season unfavorable for making inquiry, or gaining much information, and with little leisure left me from the more immediate duties of the survey, for making any observations as to the resources of the islands, their formation, natural productions, &c. I can only point them out as appearing to possess a fine field for interesting inquiry in the different departments of science. To the geologist in particular there is ample scope for research, and I have reason to think, from specimens of rock that were collected containing rich iron ore, that they will be found to be rich in mineral productions.

The same may be said of their botanical productions; the face of the larger and moderately-sized islands, having a very rich and variegated foliage, and being covered with flowering shrubs and trees of large dimension to the water's edge, some of them may be found to be new and valuable.

In the department of natural history are to be found on the large islands (by native accounts), most of the wild animals common to the main land; viz. the tiger, elephant, rhinoceros, wild cow, deer, &c. The tiger is represented to be unusually large and fierce, when compared with those on the continent, and *Kesseraing* is said to be much infested by them. The "Shan" hunters visit this and the other large islands for the purpose of shooting elephants, which they are very expert in tracking; and they have been so successful in their excursions to *Kesseraing*, that I was told by a respectable native with great gravity, that there was now only one solitary elephant of gigantic size existing on the island, and of such consummate cunning that it had evaded every attempt to capture it.

Of the birds there are several varieties of pigeons peculiar to the islands; also gulls, cranes, ("Tucans" of a large and beautiful plumage,) and various other description of the feathered tribe.

Some of the small rocky islands are much resorted to by a small white gull. One of these islands I found covered with their eggs laid on the hollows of the rock, and the birds sitting upon them: they showed great alarm by their noise and hovering over head, and although I did not unnecessarily disturb them, I found (on a subsequent visit I had occasion to make, to correct a set of angles), that they had deserted the island and their eggs!

The fish are of great variety and very plentiful amongst the inner islands, and on the flats fronting the main, the fishermen have fish weirs

and other contrivances which they erect, and these they visit annually during the fine season, for the purpose of catching fish and drying them on the different small islands.

Beautiful varieties of mollusca and polypus also much abound amongst the outer islands.

Mergui, or properly speaking—"Myut Myo"—the principal town of the *Mergui* province, is too well known to require any notice from me; one of the objects of my survey, however, having been to ascertain the approach to it from the southward, I may as well state that it is inaccessible to large vessels, owing to an extensive flat, in many parts dry at low water, which the Chinese junks and other native craft have to cross over at high water. We found the greatest rise and fall of tide never to amount to so much as 18 feet, although it has been stated at 21 feet, and it is high water on full and change days here, and throughout the limits of the survey, between ten and eleven o'clock.

The climate at *Mergui* and amongst the islands seems to be very good, and although much rain fell on this coast during the months of June, July and August, there was a proportion of fine weather, (notwithstanding the generally received opinion to the contrary,) equal to what is experienced in India during the same season. The dorians and mangosteen fruits, held in so much estimation by the natives, particularly the former, which during the season are sent in great quantities to *Ava* for the use of the Burman king, do not grow to the northward of *Tavoy*; and the mangosteen will scarcely thrive to the northward of *Mergui*. Indeed in soil and climate, there appears to be so much affinity between it and *Penang*, where these fruits are in great perfection, and where nutmeg spices and coffee are produced, that it is very probable the latter might be introduced and cultivated with success at *Mergui*, and on many of the islands.

I regret that I have been able to give to this sketch little more than nautical or geographical interest; and in conclusion will merely point out what seems to me an object of interesting inquiry to geographers, I mean the exact delineation of the coast-line on the gulf of *Siam* side, between the parallels of $8^{\circ} 0$ and $12^{\circ} 0$ N. so as to exhibit the breadth of the isthmus within these limits, and also to ascertain how far the different streams on either side approach each other.

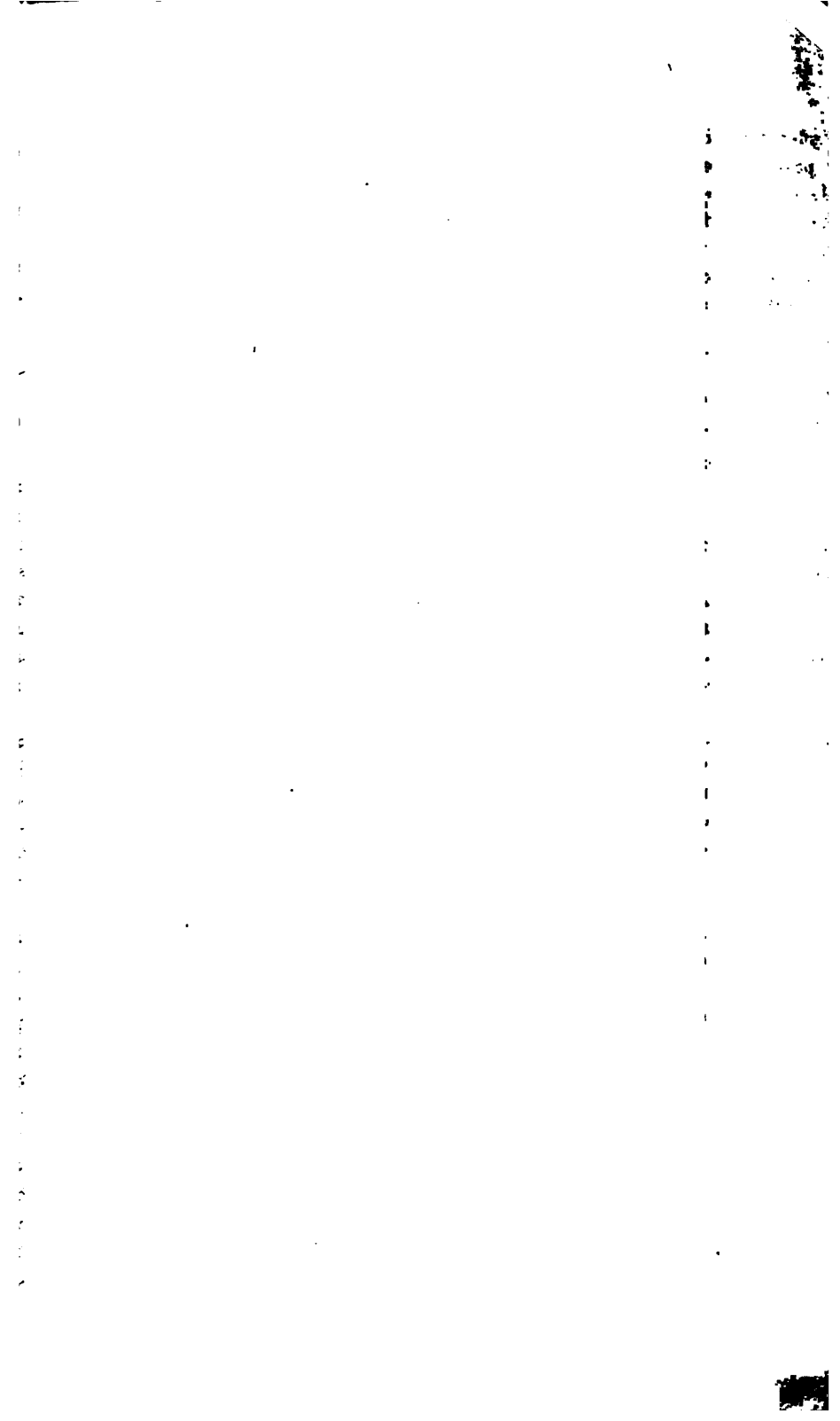
With intelligent officers from the Indian navy employed in the small government vessels on the *Tenasserim* Provinces, and in the steamer and other vessels under the *Penang* government, such a measure would have the double effect of protecting the trade and performing the usual duties expected of these vessels, and also of occasionally, when oppor-

tunities offered, adding to our stock of geographical knowledge. It would further possess the advantage of extending and keeping up a most desirable local knowledge, not without benefit to government, amongst the officers of a corps capable of rendering important service to the state, if its sphere of usefulness were extended for general employment in India instead of being confined to a subordinate presidency, which is like having the British navy under the Irish government.

IV.—On the genus *Hexaprotodon* of Dr. FALCONER and Captain CAUTLEY. By J. MCCLELLAND, Assist. Surgeon, Bengal Service.

Dr. MACLOED, physician general, on return to Calcutta from his tour of inspection, brought with him a small collection of the fossil bones of mammalia from the *Pinjore* valley, with the intention of forwarding them to England; prior to doing this they were obligingly submitted to my inspection, but for this circumstance and the desire of Dr. MACLOED that I should point out whatever might appear most deserving of notice, I should not offer, on this occasion at least, any remarks on a subject, of which there are already so many successful and experienced cultivators in India.

Hexaprotodon is the name given by Dr. FALCONER and Captain CAUTLEY to an unknown group nearly allied to the genus *Hippopotamus*, and with which we are only acquainted from the observations of those gentlemen on fragments of skeletons which they discovered in the *Sivalik* beds. Dr. MACLOED's collection contained a very characteristic fragment of one of these animals, which at once attracted my notice, and without being acquainted at that time with the excellent memoir of the gentlemen alluded to, though it is printed but not yet published in the 1st part, XIXth volume of the Asiatic Researches, I pursued an inquiry into the group as far as the materials in Dr. MACLOED's collection, as well as that of Col. COLVIN in the Society's museum, enabled me to go. After this I had the gratification of finding the results to which I was led corresponded nearly, and I may say perfectly in all essential particulars, with the previous report of Dr. FALCONER and Captain CAUTLEY already alluded to. On some points however I feel justified in forming bolder conclusions especially regarding the affinities of the group, and the number of species that belonged to it. With regard to the first part of the subject it is necessary to refer to the *Hippopotamus*, one of those genera whose remains are extensively dispersed throughout the superficial strata of the earth, though the habitat of the only existing species



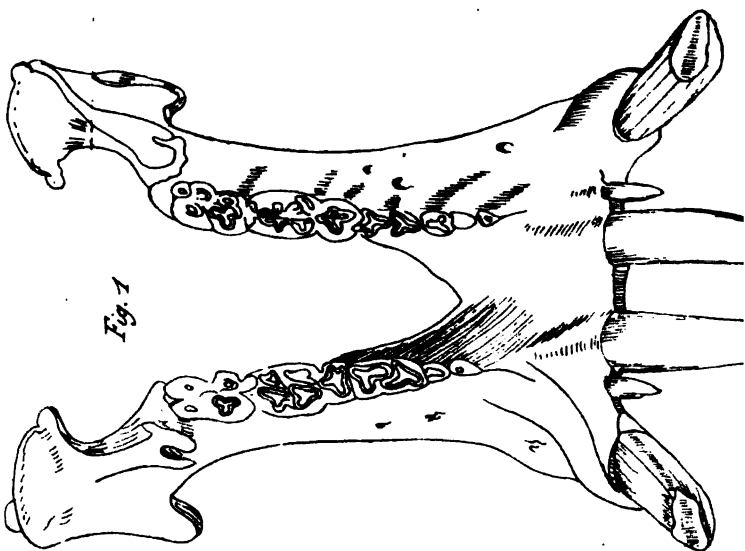


Fig. 1

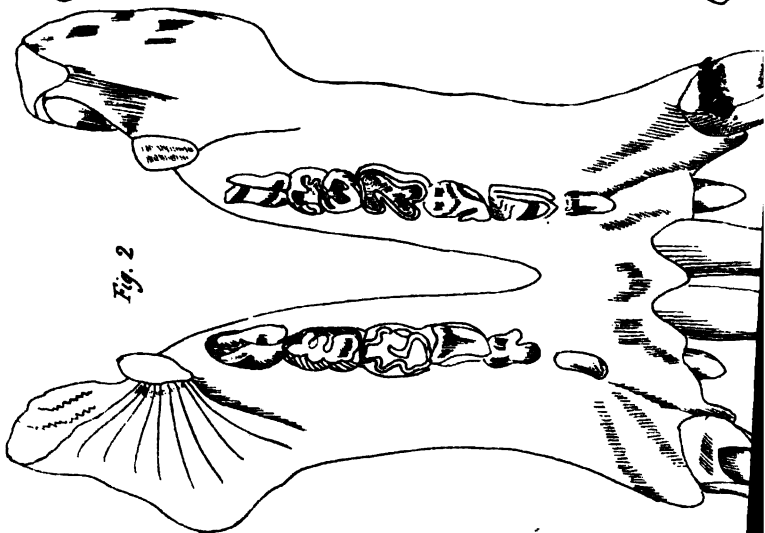


Fig. 2

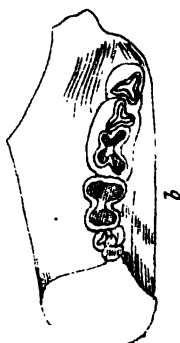
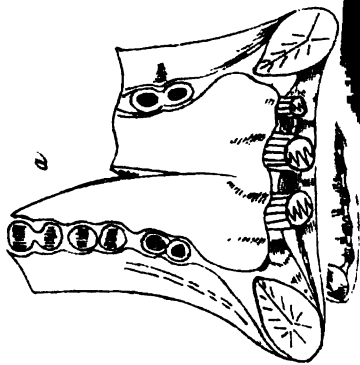


Fig. 3



is confined to South Africa, but the remains of others are found in Italy, France and England; so that its race may be said to have become almost extinct, and perhaps in the course of a few ages the existing species may like the *Dodo*, be numbered amongst those animals that have disappeared from the earth in modern times. Even since the time of the Greeks it appears to have become more restricted in its distribution, as it is referred to in their writings as an inhabitant of southern Egypt, where it is now unknown. The very idea of an animal of colossal bulk, capable of concealing itself by day beneath water which it quits only at night in search of pasture, is so contrary to the ordinary character of beings of the present world, and so opposite to the general economy of the living things that surround us, while it accords with the traces of the times that have passed, that we might infer from this circumstance alone, that the condition of the earth is now less suited to such gigantic amphibia than formerly, even if more direct evidence of this fact were wanting.

The remains of the *Hexaprotodons* brought to light by Dr. FALCONER and Captain CAUTLEY afford the characters of types still more aquatic, and which from certain peculiarities of structure would appear to have been hardly capable of extending further on land than the sandy or muddy confines of their own element. Before entering on the peculiarities from which this conclusion is derived, I shall briefly refer to what naturalists say of the habits of the existing hippopotamus.

The body is described as massive, without fur, the belly nearly touching the ground, and the head of enormous size, terminated by a strong thick muzzle, at the corners of which in the lower jaw two powerful canine teeth are placed, curved upwards with cutting edges often formed behind by the detrition of corresponding teeth in the upper jaw. Between these in front, there are four conical incisors in the lower jaw, extending obliquely upwards and forward; the two innermost of these are long and nearly as strong as the canine teeth, but the two outer incisors are shorter and every way less developed. The lower jaw is massive and strong, but much deeper under the molars than below the incisors at the chin, the whole economy of these parts being admirably adapted for cutting and tearing roots, and other fixed objects of a similar nature, on which it is said to subsist.

This description applies not only to the existing species, but also to the three fossil species discovered by CUVIER, who gives the characters of the genus as follows: "Incisors 2, canines 2, cheek teeth 7; = 40;" but in the *Hexaprotodons* of FALCONER and CAUTLEY the incisors are six below, and six above, a distinction of itself perfectly sufficient to

establish the sub-genus as a new group, of which, they describe two species. In these animals the incisors are not only different in number from those of *Hippopotami*, but are also more uniformly developed, and are prolonged almost straight forward in the long axis of the head, the general proportions of which, though considerably less than those of the existing hippopotamus, are proportionably more massive and ponderous, while the incisors on the contrary are more slender, so much so as to preclude the supposition that they could have been used either for digging up roots, or as an armature in committing those violent depredations on dry land ascribed to the hippopotamus. It is therefore probable, as has been observed, that their habits were more aquatic. What proportion the head bore to the body we have as yet no means of knowing, the vertebræ and bones of the extremities not being yet determined, but we may still attain a farther insight into the characters of the *Hexaprotodons* by comparing such fragments of their jaws as have been found with the corresponding parts of the existing hippopotamus, and we find by this means that although the length of the jaws from the alveolus of the incisors to the last molar is, $9\frac{1}{2}$ inches in the latter, and from $11\frac{1}{2}$ to 13 inches in several specimens of the former, yet that the thickness or depth of the lower jaw at the symphysis is only four inches in the existing hippopotamus, while this measurement amounts to $5\frac{1}{2}$ inches in some of the hexaprotodons. In the first the breadth of the jaw at the narrowest part behind the canine teeth is five inches, and in one of the latter species, six; thus indicating a weight and massiveness in the head of the hexaprotodon which if attended with corresponding proportions in other parts of the frame must have belonged to an animal almost too unwieldy for locomotion on dry land, the hippopotamus itself from the shortness of its limbs being barely capable of such a mode of progression. The ponderous character of the jaws of the *Hexaprotodons* also implies a proportionably powerful muscular system; and when we contrast such a condition with the slender size of the incisors which are extended forward like a grate of comparatively long delicate bars, we can conceive no other object of such a structure than that of raking the *Fuci* and *Conferroid* plants either from the surface of water or from sands or soft muddy banks of rivers or lakes. Whether such will eventually prove to have been the case or not, will depend on the success that may attend the researches of zoologists in identifying other parts of the skeletons of this interesting group, in addition to those fragments that have already been identified by Dr. FALCONER and Captain CAUTLEY. At present we can only be guided by the facts that are laid before us, and perhaps

another argument may be adduced in support of the above view of the habits of these animals from the cheek teeth being extended at shorter and more regular intervals along the sides of the jaws to the canines, a structure which we may suppose to be more essential to the use of a soft food. As a share of Colonel COLVIN's extensive collections, comprising I believe many specimens of these animals, has been presented to the museum of the University of Edinburgh, we may expect the subject to receive the attention which it deserves, but at present we must I think, regard the type as more aquatic than that of the hippopotamus.

Dr. FALCONER and Captain CAUTLEY conceive that the genus *Hippopotamus* of LINNÆUS was confined to Africa and Europe, and that its place has been supplied in India by the *Hexaprotodons*: in this they are probably correct, but there is one specimen (fig. 3.) in Col. COLVIN's collection which though very imperfect appears to render the question at least somewhat doubtful; the two inner incisors being indicated by the remains of their fangs, and a single small outer incisor occupying the centre of the space between the large incisor on the left, and the canine tooth, with a proper space on the opposite side, in which however, all trace of a corresponding tooth is obliterated. A careful examination of all the specimens in the museum, would also lead us to suppose that there must have existed in India more species of the new group than the two which Dr. FALCONER and Captain CAUTLEY have described, and I should be disposed to think the specimens alluded to tend to countenance the probability that four species existed, although our materials are hardly to be considered satisfactory on this point: from the importance of the subject it is desirable that the contents of every museum, so far as they are capable of bearing upon the question, should be known, so that the contents of one collection might illustrate those in another. I will therefore attempt to describe the separate specimens which I have examined. To show how far these fragments differ among themselves as well as from the corresponding parts of the existing hippopotamus (fig. 1.) and the principal species of the same fossil found in Tuscany (fig. 2.) the upper view of the lower jaws of those species are given for comparison.

Fig. 3. is the front portion of an imperfect lower jaw in Colonel COLVIN's collection; it has one large incisor on either side of the mesial line, with a small one in the intermediate space on the left side as in the hippopotamus, so that a third could not have existed on that side; but all trace of a corresponding incisor between the canine on the right side, and the inner incisor is obliterated, though the proper space for one remains. This appears to be the *H. dissimilis*, FALC. CAUT.

Fig. 4 is the corresponding part of a specimen in Mr. DAW's collection*. It is the *Hexaprotodon Sivalensis*, FALC. CAUT., and appears to be the specimen figured by DURAND, t. 4, f. 2.5, As. Res. vol. xix.

The breadth of the muzzle at the insertion of the incisors is ten inches, and of the jaw behind those teeth four inches, and the depth of jaw is five inches, and the length from the front to the last molar eleven inches. The four first cheek teeth are conical, single and prominent; the last molar is also composed of four prominent points but little worn, indicative of the youth of the individual, but still the other characters of the specimen are so well marked as to leave little doubt of its characterising a distinct species remarkable for the narrowness of the jaw behind the muzzle.

The incisors remain projecting nearly horizontally in front to the extent of two inches, where they were broken (As. Res. t. 4, f. 2) and may from this circumstance be presumed to have extended a considerable distance farther in front than represented. They are all of the same size, nearly cylindric, and about $\frac{1}{2}$ of an inch or rather less in diameter; the enamel of the canine teeth is striated as in the hippopotamus and the posterior edge worn by detrition.

Fig. 5 is the lower jaw of a specimen in Colonel COLVIN's collection, it is more complete than any of the others, but on the left side the cheek teeth are removed to their sockets, as well as the canine teeth and incisors. The height of this jaw is barely five inches and the breadth of the muzzle ten and a half, the narrowest part of the jaw behind the canine teeth five and a half, and the length from the front of the jaw to the last molar is fourteen inches. The first cheek tooth alone seems to present a single crown, the three next are double, and as the teeth are perfect on the left side of an upper jaw in the same collection, which seems to have belonged to an aged individual of the same species, we can have no doubt as to the number of teeth proper to the group. In this species there are seven cheek teeth, the second and third placed in pairs. This appears to be the species indicated by DURAND, As. Res. xix. p. 57, t. 4, f. 4.

Fig. 6 is the corresponding portion of the lower jaw of a specimen in Dr. MACLEOD's collection; it differs from the preceding species in the breadth of the jaw which measures over the alveolus of the incisors eleven and a half inches, and at the narrowest part behind the canine teeth, six inches; except in breadth behind the incisors (fig. 4) corresponds nearly with this specimen, but the difference of breadth is so remarkable that we must, I think, regard the two as having belonged to separate species.

* The scale on which the figures are represented is one-fifth of natural size.

On the right side the anterior cheek tooth is broken in the socket, and the second tooth in the row presents two distinct crowns situated close together, but in the left side in this specimen as well as in a fragment of what is probably a corresponding species in the Asiatic Society, the second cheek tooth presents a single large compressed crown; the three next teeth are placed close together, and are perfectly distinct from each other, but from the manner in which dentition appears to take place in these animals two points of the same tooth may be more or less distant from each other, so that a corresponding tooth in different individuals may occasionally appear double or single according to circumstances, but allowing the utmost latitude to variations of this kind, still we must regard the specimen in question from its breadth to characterise a distinct species; more especially as we find the following fragment in the Asiatic Society's museum to corroborate all the essential peculiarities of this species.

Fig. 6 b. The fragment of a gigantic individual*, which presents a depth of six inches at the chin, with a breadth of more than twelve inches, and corresponds with Dr. MACLOED's specimen fig. 6, so forcibly as not to be mistaken in the most minute particular as having belonged to a larger individual of the same species; the second and third cheek teeth in this are still remaining on the right side as well as the sockets and alveolus of the incisors and canines. The importance of this specimen (of which I have given two figures 6 b. and 6 c. the latter being the under side), consists in its suggesting that a difference in the same species gives rise in these, as in other animals, to no difference in form, and consequently that a difference of form in the fragments of several species is to be regarded as a specific distinction. Before I became acquainted with this fact, and compared the specimens to which I am indebted for a knowledge of it, I was disposed to think the following specimen probably belonged to a young *Hes. Sivalensis*.

Fig. 7 is the corresponding portion of the lower jaw of a small specimen only seven and a half inches across the muzzle, and three and a half inches in depth. The narrowest part of the jaw behind the

* On a shelf in the north-western corner of the museum, along with the cervical vertebrae, teeth, and other fragments of elephants and mastodons and numerous broken tusks of hippopotami without labels, or any indications of the place in which they were found, or who the donors were, so that we are left to infer that they came from the *Sivalik* beds, though in the same side of the apartment there are collections from *Ava* also without labels; these have been destroyed by insects, which seem to have recently taken advantage of the neglected state of this department of our museum.

canine teeth is four inches in breadth, the whole being comparatively flat and broad: the reverse of what belongs to the species of which I supposed it might have been a young individual. The specimen is however too imperfect to show any peculiarities of dentition, the sockets of some of the teeth only remaining, and the left angle of the jaw being broken so as to give the muzzle an unequal appearance.

It is not consistent perhaps with the most approved method of studying nature, to lay very great stress on the peculiarities of any one organ in different animals; but it is rare that more than a fragment of some portion of the skeleton of fossil *vertebrata* is afforded for observation. The development of horns, and even of some parts of the frontal bone, as of the superciliary arches of the orbits, is liable to sexual and individual peculiarities*, but I am aware of no such objections to the fullest reliance on the lower jaw as a safe criterion for specific variations; for this purpose I have made considerable use of it in the arrangement of fishes, and there is no reason why it might not be equally useful as a criterion of species in other classes.

The two species described by Dr. FALCONER and Captain CAUTLEY differ essentially in this, that the jaw of *H. Sivalensis* is broad at the muzzle, and contracted more than the existing species over the penultimate false molar (Asiatic Researches, XIX. 47.) while that of *H. Dissimilis* is very narrow at the symphysis, where a greater number than four incisors does not appear to have existed. Hence fig. 4 in the annexed plate, and figs. 1, 2, plate IV. Asiatic Researches, XIX. represent *H. Sivalensis*, while the imperfect fragment in Colonel COLVIN's collection fig. 3, in the annexed plate, is a characteristic fragment of *H. Dissimilis* of FALCONER and CAUTLEY.

But still we have fig. 4, pl. IV. (As. Res. XIX.) of DURAND, which corresponds with a very perfect lower jaw in Colonel COLVIN's collection, from which my fig. 5, on the annexed plate was taken, and regarding which Mr. DURAND justly observes (Op. Cit. pp. 57): "It presents a marked difference in the shape of the incisors which are more elliptical than in the preceding varieties. The exterior incisors have a section not observable in any other specimen; and are relatively to the four centre incisors set lower than analogous incisors of other varieties—may not this" he continues "be considered a distinct species?" I am led to the conclusion after an examination of Colonel COLVIN's specimens and all others in our museum that it is, and pro-

* In one of Major HAY's heads of the hippopotamus the arches of the orbits ascend two inches above the most prominent part of the intervening nasal process, and in the other only one inch.

pose to name it *Hes. anisiperus*, from *anisos* unequal and *peras* a line, referring to the irregular form of the incisors in this, compared with the other hexaprotodons.

I am also led to the conclusion as already stated, that Dr. MACLOED's specimen fig. 6 affords a third species agreeing with *H. Sivalensis* in having a broad muzzle and the incisors in a straight line, but differing from that species in the molar teeth being nearly parallel on either side of the jaw, or less contracted behind the canine teeth, and the general form of the jaw thicker and broader than any other member of the group, and hence it may be named *Hexap. megagnathus*, from *megas* large and *gnathos* the jaw.

In addition to these the small specimen fig. 7 must, I think, be regarded as a fourth species, distinguished by its broad shallow muzzle, and though much contracted behind the incisors like *H. Sivalensis*, still differing from that species in the flattened form of the jaw, on which account it may be named *Hexap. platyrhynchus*, from *platus* flat, and *rhynchus* the snout.

In the only upper jaw of hexaprotodon in Colonel COLVIN's collection in the Asiatic Society's museum; the cheek teeth on the left side are all nearly perfect, and so much worn as to indicate the advanced age of the individual to which it belonged. The incisors are removed but their sockets are as distinctly marked on both sides as could be wished. From the form of the muzzle it would appear that the upper incisors were directed more abruptly downwards than in the hippopotamus, they must consequently have been very short as their growth would necessarily be interrupted by the lower incisors; they are also of rather smaller diameter than the latter, but of equal size among themselves, and appear to have been intended for grasping such substances as were collected on the lower range of teeth, and with the assistance of the lips and tongue for drawing a soft aliment into the mouth, rather than for tearing like the hippopotamus. This jaw appears to have belonged to the same species as fig. 5, but to an individual a little larger.

It is unnecessary to say that the intermixture of terrestrial and aquatic forms entombed in the *Sivalik* hills, renders it impossible to derive any conclusion as to the habits of an animal towards land or water from its remains having been found in such a situation. The small collection of Dr. MACLOED comprises, in addition to the fragments of the jaws of a *Hexaprotodon*, the upper jaw of a *Palæotherium*, the frontal bone and horns of a *Bos*, various fragments of elephants and the scales or armour of a gigantic *Garial* nearly allied to *Lacerta gange-*

tica, GM.* The scales of several crocodiles are marked on the back with a peculiar transverse ridge or carina which assumes a different form in the various species.

In the largest *Garial* in the Asiatic Society's collection these scales are three inches long and two broad, but the fossil scales are from five, to five and a half inches in length, and from three and a half to four in breadth, and one inch in thickness; taking into consideration the manner in which such scales are developed, the saurian to which the fossil scales belonged must have equalled if not exceeded the largest size to which *Garials* now attain.

The head of the *Palæotherium* in Dr. MACLORD's fossils, and the scales just noticed are enveloped in a calc tuff in a manner that deserves to be described. The first seems to have lain detached, resting on the palate and molars of the upper jaw, when calcareous water descended in drops gradually filling up the orbits and other depressions, thus converting the upper surface into an uniform hemispherical mass leaving the teeth and palate uncovered.

The scales of the *Garial* six in number are encased in the same manner, but what is still more interesting, they all preserve their true relative position and somewhat of the form of the reptile's back, as if they had been at once sealed together as soon as the animal had perished, and this I think we may prove to have been the case.

The lorifications of these saurians are not imbricated like the scales of fishes, but are enclosed in a duplicature of the skin, and merely approximate without uniting in any way at their edges, so that the cutis is their only bond of union. Had this perishable substance given way long, before the deposit of calc tuff commenced, it is natural to conclude that such bony plates would from their form have been variously scattered around the vicinity in which the animal perished and lay exposed†. Hence we must infer that the drop commenced on the recent remains of the saurian, that it continued to operate until the upper surface of six of the scales was involved in one mass of carbonate of lime, and that this mass was found in the identical position in which the animal perished; that it was not transported from a distant locality we may further infer from the fact of some of the

* Captain CAUTLEY has established the identity of this fossil crocodile with *C. biporcatus*, Cuv.

† Calc tuff is not deposited from water except under exposure to the atmosphere, so that it cannot take place in a close cavern or beneath the surface. Objects incrustated with it must therefore have lain exposed on the surface when the operation began.



found in Budukhshan by D^r LORD

comparatively slender scales remaining uninjured, though projecting from the edges of the mass beyond the enveloping deposit of carbonate of lime. Exact information of the circumstances under which fossils are found, though a subject of the highest importance, very rarely receives from collectors much attention, but as it is evident from these remarks that beneath the spot on which the scales of the *Garial* were sealed, that is, the spot on which they were found, its skeleton might be expected to lie, the locality may deserve further investigation.

V.—Coins and relics from Bactria.

It has been already announced in the pages of this Journal, that the extensive collections of coins and other relics made by Mr. MASSON, by Sir ALEXANDER BURNES, and Dr. LORD, were on their way to Calcutta, and were likely to fall shortly under the examination of the Editor. He felt it as a great compliment that was paid to his efforts to restore the lost portions of Indian and Bactrian history by means of the coins and inscriptions, still extant in the language and with the superscriptions and dates of the rajas of those times, that collectors in all parts of India were in the habit of submitting to his inspection whatever they lighted upon as unusual, and sought his reading and interpretation of the legends, emblems and inscriptions which baffled the learning and ingenuity of the pandits and antiquaries of the vicinity. As a consequence of the happy discoveries made by him in this line, coins and transcripts of inscriptions came in from all quarters, from Assam and Ava to Bokhara and Sindh, and from Ceylon northward to Nipal. The possession of the rich store of materials thus accumulated gave facilities of comparison and collation which were doubtless a main cause of his success: but the study and exertions required for the satisfaction of these numerous references to his individual skill, although entered upon with a zeal participated only by those who have achieved much, and feel that there is yet more within their reach which ought to be the result of their own discoveries, were too severe for the climate of India, and the Editor's robust constitution sunk at last under the incessant labour and close attention given to these favorite studies at the very moment when the richest collections of inscriptions, coins, and relics, that had ever been got together in India, were actually on their way to Calcutta as materials for maturing the results he had achieved. The collections of Mr. MASSON were forwarded from Bombay in the *John Adam* which reached Calcutta only in the course of the past December. There are

of these coins from four to six thousand, besides the contents of several topes, and casts of figures of Budh, with various other remains of the period antecedent to the Muhammadan invasion of *Bactria* and *Afghanistan*. The whole of this collection was by order of government laid upon the table of the Asiatic Society at the meeting of January 1839, but the members present felt that in the absence of their late Secretary, and likewise of Captain CUNNINGHAM, Mr. V. TREGEAR, and Colonel STACEY, there were no persons in Calcutta to whom the examination, arrangement, and report upon the coins and relics could be committed with confidence. They came therefore to the unanimous resolution to recommend their being forwarded without delay to England, where the Honorable Court would have the opportunity of submitting them to the inspection of the late Secretary of the Asiatic Society, jointly with Dr. WILSON the librarian at the East India House, and so the ends of science and of antiquarian research would be most effectually answered.

The care of this magnificent collection, which is large enough to supply all the museums in Europe, has been kindly undertaken by Mr. CRACROFT, a very zealous member of the Asiatic Society, and there is ground for hoping that under his superintendence a catalogue may yet be made before he takes his final departure for England. The articles have come round in bags without any separate lists, and in one bag there are about two thousand copper coins.

But independently of Mr. MASSON's collection, another numbered by thousands has been brought to Calcutta by Dr. McLEOD the Inspector General of hospitals to H. M.'s forces in India. This consists partly of coins of all metals, but there are also several seals and gems of different stones cut with a great variety of emblems and devices. All these are the property of Sir A. BURNES, and have arrived for deposit and custody as well as for inspection; they are therefore still available for the curious, and will continue so until Sir A. BURNES shall send instructions as to their disposal. We cannot ourselves undertake the particular examination of these relics so as to give the detailed description they deserve. A selection from the coins had however previously been made at *Simla*, and those deemed most curious being forwarded by the dawk arrived fortunately before the departure of our Editor. Amongst them is that most curious coin of Dr. LORD with the head of EUCRATIDES on one side, and of both his parents on the other, a drawing of which was exhibited in plate No. XXVII. of this volume. From the other selected coins thus transmitted a plate was prepared by the Editor, which was intended to be illustrative of an article

he designed giving in our last October number. The plate remains, and we attach it to this article, that the curious who have followed our Editor to the length of his past researches may see the objects which he deemed worthy of fresh illustration in the field of Indo-Bactrian numismatology. If the *Herefordshire*, the ship in which he took passage, had touched at *Madras*, or had put into *Mauritius*, or had met a vessel at sea, we might have hoped for the comments promised on this, as on other two plates which we also intend to give and shall separately refer to. But the time approaches when the issue of the last number of our series will be expected, and we can no longer defer the publication, under the doubtful expectation of receiving the expected paper from the *Cape of Good Hope*. Of the coins and gems therefore in Sir ALEXANDER BURNES's collection we can at present make no use, but we hold them in deposit for the examination of others and to wait his further instructions. We must be content at present to give the plate referred to, which it will be seen is numbered XXXII. together with such brief reading of the names, as a Tyro of Indian numismatics might be expected with the aid of the alphabets to supply. The plate is of Indo-Bactrian coins of date antecedent to the introduction of Grecian art, with the Grecian alphabet, into the mints of that country. The legends are in the ancient No. 1. character of the then universal Páli language, with Bactrian characters in some instances on the obverse or intermixed. The names and emblems on these coins are well worth the study of the learned.

Along with Sir A. BURNES's coins Dr. McLEOD brought to *Calcutta* a very singular relic obtained by Dr. LORD at *Badakhshán*, and which is we believe destined for the British museum. The relic in question is an ancient patera of silver, embossed in the interior in very high relief, and representing, with all the usual adjuncts of classic mythology, the procession of BACCHUS. The god himself sits in a car drawn by two harnessed females with a drinking cup in his hand. A fat infant SILENUS stands in front, and there is a female figure kneeling on the after corner of the car, which from its disproportionate size we imagine to be the carved elbow of the seat on which the god reclines. There are also two winged cupids in attendance, one flying with a wand in his hand to which a fellet is attached, the other end of which is held by the infant SILENUS; and the other on the foreground behind the wheel of the car, as if employed in pushing it on. The car is followed by a dancing HERCULES distinguishable by the club and lion skin. The heads of this figure and of the BACCHUS are both wanting, owing probably to their having been of gold or thought so, while the rest of the patera

being only of silver gilt, has escaped similar violation. The gilding however is mostly worn away from long use, and in one part the side of the cup is actually worn through. Independently of the circumstances of the main figure being represented with a cup in hand, its identity with the Grecian BACCHUS, is proved by the vines circumpendent, and by the figure of a tiger standing prominently out in the fore ground and drinking out of a wine jar.

This very singular relic being destined to leave the country, we have thought it necessary, besides giving in these pages a plate made from an accurate drawing with a scale, to have a cast prepared from it in tin, so that in case the original should be lost in transmission to Europe; the facsimile may remain to give a complete idea of its form and execution. The cast is of course not equally sharp in its lines with the chased original, but connoisseurs will know how to make exact allowances for that difference.

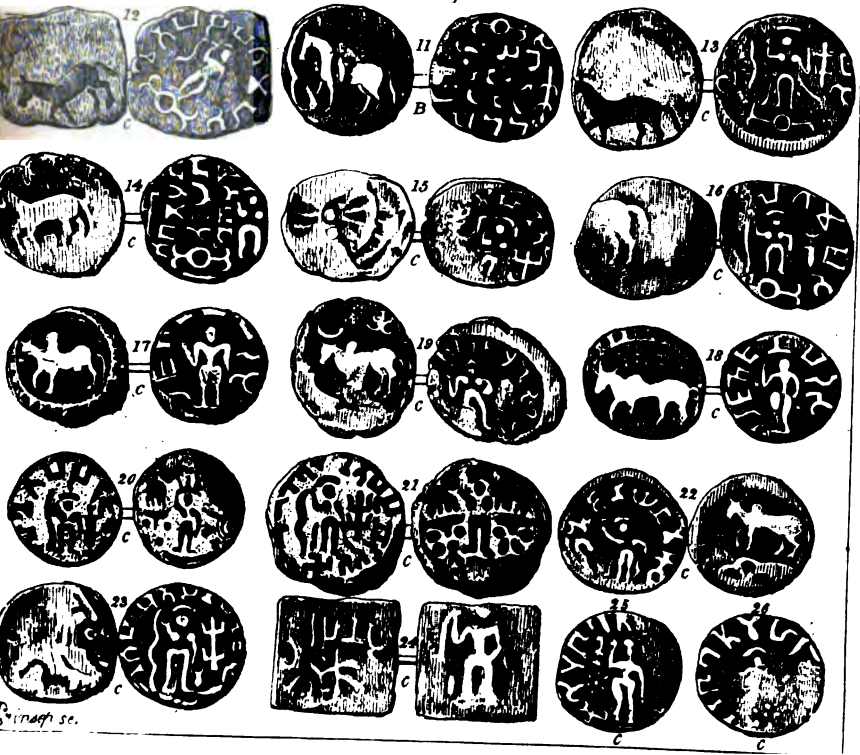
This patera is the property of Dr. LORD, who is also the fortunate owner of the double-headed coin of EUCRATIDES, the original apparently from which the plate of a similar coin is given in Dr. VINCENT's Periplus; but the double head is there represented as being on both sides of the coin. With a liberality deserving of particular notice, both these unique relics have been gratuitously appropriated by the finder, or are intended to be so, in the manner deemed by him most conducive to the ends of science, Dr. LORD not desiring to retain them as isolated trophies of his own good fortune in the field of research and discovery.

I fear we must not look upon this piece of plate as affording evidence of the state of the arts in *Badakhshán*, where it was found, at any particular æra. That it is of high antiquity is quite apparent from the condition of the metal, as well as from the design, but in the Periplus of the *Erythrean Sea* published amongst ARIAN's works, it is distinctly stated that ἀργυρόματα, i. e. articles of silver plate, were a staple import from the west, for exchange against the productions of India. At *Minnagarh* upon the Indus, it is further stated by the author of that treatise, that he himself presented to the rāja βακτηρία ἀργυρόματα, valuable pieces of plate, in order to secure his favor, and the grant of certain privileges of trade. There is thus reason to believe that the patera must have been brought from Greece or Asia Minor, and either presented in like manner, or sold to some sovereign of *Bactria*, by a merchant desiring similar privileges of trade in that country. That it has been in use for centuries is evident from the worn condition it now presents; but for how many it was in use, and for how many it lay treasured in royal or other repositories, is more than may now be conjectured.

Indo-Bactrian Coins



Buddhist Satrap Coins.





A drawing of this patera was made at *Simla* by no common hand several months ago, and it arrived and was exhibited at the Meeting of the Asiatic Society, but somehow disappeared, so as to preclude an earlier description of this relic being laid before the public. We have now the original before us, and have examined it closely, to see if there were any inscription, stamp or emblem, which might afford some clue to the date and locality of the manufacture, but are compelled to be content with a mere description of its outward appearance, being unable to hazard a conjecture as to either.

Indo-Bactrian Coins.

Specification of coins in Plate XXXII. Vol. VII.

No. 1. Obv. Armed figure standing with a club or spear: no inscription. Rev. Elephant with rider: Bactrian inscription RAJASA, rest not decypherable.

No. 2. Obv. Woman and deer, with inscription not legible: ☐ emblem. Rev. Tree and mountain, with ♀, and ☒ emblems.

No. 3. Obv. Man and bull, same emblem as No. 2, and MAHÁRAJASA MAHA BHATASA in old Páli clearly legible, but the name to the left baffles us. Rev. Same device and emblems as No. 2, and MAHÁRAJASA clearly legible in Bactrian at the bottom.

No. 4. Obv. Same device as No. 2, and same emblem, RAJNA RAJASA MAGHADATASA in old Páli. Rev. Same device and emblems as No. 2, MAHARAJASA in Bactrian: the rest not legible.

No. 5. A larger coin, the same device on both sides as No. 3; Obverse defaced; Rev. MAHARAJASA in Bactrian characters.

No. 6. Obv. Bull and ☒ emblem, no letters. Rev. Same emblems as Nos. 2, 3, and 4, with addition of a wheel: very peculiar.

No. 7. Obv. Deer and man, with emblems ☒ and ☐: RAJNA KUNANDASA in old Páli. Rev. Same as Nos. 2, 3, 4, &c.

No. 8. Obv. Deer and woman: MAHARAJASA in Páli. Rev. Same as No. 2, no inscription.

No. 9. Obv. Deer and man, KUNANDASYA in Páli. Rev. Same as No. 2.

No. 10. Same precisely, Páli inscription NANDASÁ the last letter being an initial A' H.

Buddhist Satrap Coins.

No. 11. Obv. Horse caparisoned. Rev. RAJASA, in Bactrian, with various marks.

No. 12. Obv. Horse. Rev. Standing figure with bow: inscription in Páli, SARBA TÁPASA PATAMAPASA, Thamasp?

No. 13. The same indistinct.

No. 14. Obverse the same worn. Rev. Inscription in lines, TAMAPASA legible in Pāli.

No. 15. Nothing distinct.

No. 16. Obv. Horse's tail and hind quarter. Rev. Figure standing LAGA'MAPASA in Pāli.

Nos. 17, 18, 19. Obv. Ball. Rev. Standing figure with inscription RAJNAPADASA : centre one in Bactrian.

No. 20. Obv. Standing figure, Pāli inscription, PACHUATASA: Rev. Figure: no inscription.

No. 21. Nothing made out.

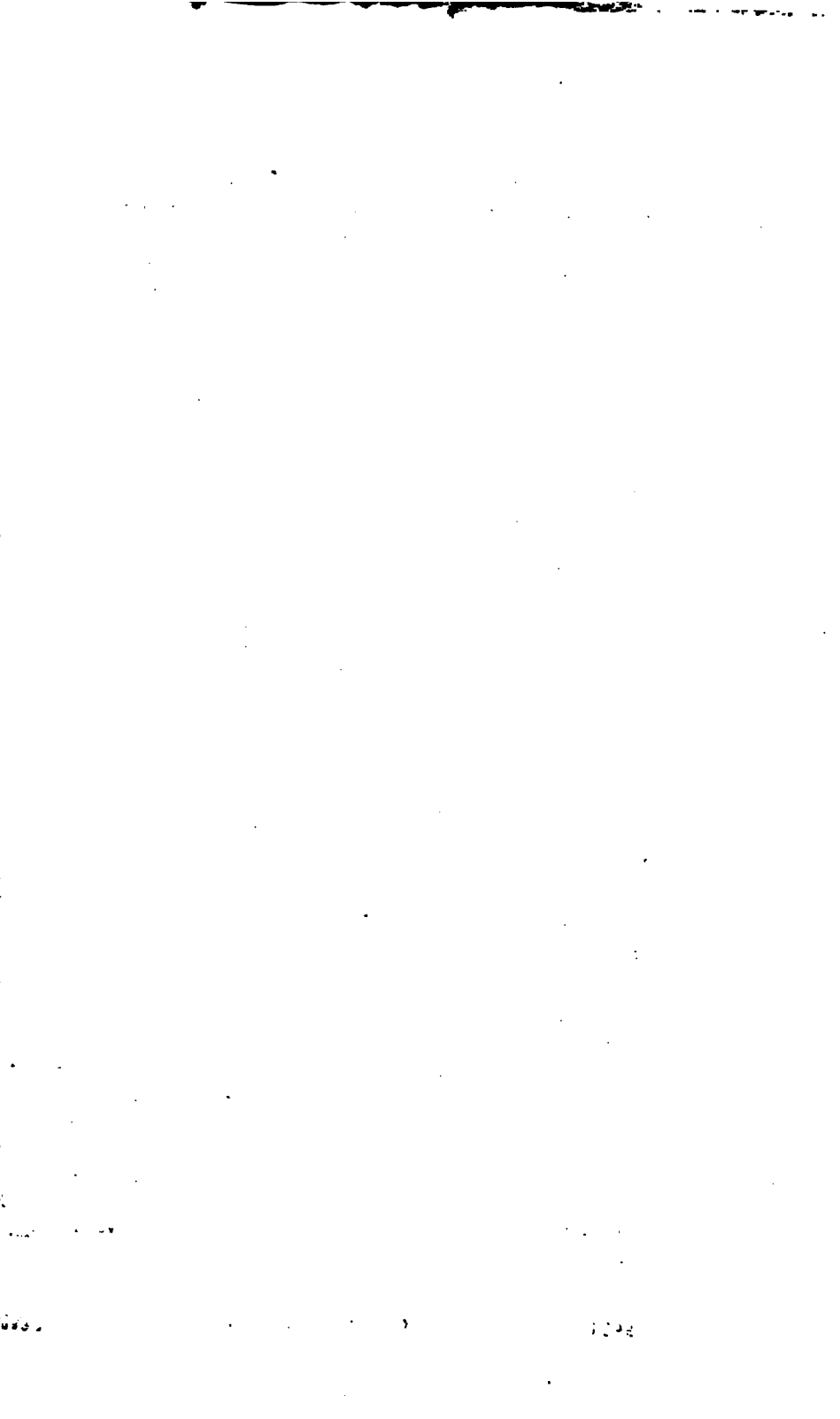
No. 22. Obv. Figure in speaking attitude. Rajna RAGHUNA'M.

Nos. 23, 24, and 25, not decyphered.

N. B. These latter are classified as of the Satrap group, first because of the title Rāja or Mahārāja not being found in any of them; secondly, because of the names having so evidently an ancient Persian aspect, and lastly, because of the horse emblem, which probably had its origin in the circumstances which attended the accession of GUSHTASP, DARIUS HYSTASPES.

VL—*Ancient Hindu Coins from Jyompur and Oojein.*

Besides the coins of *Bactria* and *Kabul*, which formed the subject of the preceding article, and which carry back the numismatic records of that country to times anterior to the *Grecian* invasion, when it formed a province of the dominions of the great king of *Persia*, and even before that, when governed by its own, or by an Indian mahārāja, there have been found simultaneously in distant parts of India, other similar records of the same periods. Mr. VINCENT TREGGAR has been so fortunate as to obtain, in the vicinity of *Jyompur*, several coins of the early period of the Devas and Dattas, with legends, plainly legible, in the oldest form of *Pāli* character, and likewise more than one PURUSHĀ DATTA, which it requires no great stretch of credulity to identify as the coin of the great PORUS himself, the antagonist of ALEXANDER. These coins were transmitted to our Editor for more complete illustration, with a brief notice by Mr. TREGGAR, whose readings have much aided us in framing the annexed descriptive list. From the number thus transmitted a selection was made for the annexed plate, which was not ready when our Editor left Calcutta. We think it due however to our readers to insert the plate in the last number of this series of his journal, for the same reason, that we in the preceding





Ancient Hindoo Coins.



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
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article gave the plate of Indo-Bactrian coins, and with the same imperfect notice of the legends and emblems.

Ancient Hindu Coins, Square. Plate, No. LX.

No. 1. Copper coin, Obv. Bull and mountain with double cross, as in Indo-Bactrian coins, but with one tier less, thus  instead of , at top plainly legible in ancient Pāli DHANADEVASA. Rev. Warrior figure standing in centre : no inscription.

No. 2. Obv. Same bull device and inscription, but instead of the two-tier mountain an emblem thus , quasi, garden and tree. Rev. Same as No. 1.


No 3. Obv. Sitting elephant, trunk curled inward, inscription according to TREGEAR, also DHUNADEVASA, but we read CHATUDEVASA or CHATRADEVASA. Rev. Indistinct.

No. 4. Copper. Obv. Bull turned leftward ; inscription in ancient Pāli VA'SUDEVASA. Rev. Curious circular device, snake at bottom, tree and garden to right, and left  : no inscription.

No. 5. Copper. Obv. Device, perhaps a fire-altar, but very peculiar. Inscription in Pāli DHANADEVASA. Rev. Peculiar, indescribable.

No. 6. Copper. Obv. Elephant passing to left. Inscription Pāli, as in No. 3. Rev. Sitting figure in circle : no inscription traceable.

No. 7. Copper. Obv. Bull passing leftward : no inscription. Rev. A circle, somewhat similar to No. 5 : nothing clear.

No. 9. Copper, broken. Obv. Device not distinguishable ; inscription, first letter effaced, *Danasa* the concluding letters clear. Rev. Tree and garden with .

No. 10. Inscription of a coin clearly legible PA'PAPAGHO.

No. 11. Ditto apparently KANEVA'SA




No. 12. Ditto Raja DHANADEVASA.

Nos. 13 and 14. End of inscription, NAVASA.

Hindu Round Coins.

No. 8. Bull looking to right. Rev. Large letters at bottom NEVASA ; emblems indistinct.

No. 15. Obv. PURUSHA DATASA in old Pāli, round a standing figure, with double *trisula* or trident to the right.

No. 16. Female figure, with four Pāli letters, AAOL, not quite legible ; emblems  and  with .

No. 17. Flower with old Pāli letters not distinguishable.

No. 18. Standing figure with double trisul, or tree, to left, Pāli inscription round, not legible.

No. 19. Standing figure, without inscription or emblem distinguishable.

No. 20. Obv. Standing figure, tree to right : RAJNA RAM DATASA in Pāli. Rev. Tree only distinguishable.

No. 21. Standing figure ; inscription large in Pāli characters, RAJA RAMA DATASA.

No. 22. Standing figure, RAMA DATASA plainly legible : star, snake, and other emblems.

No. 23. Standing figure, with bull, trisul, and star, RAJA RAMA DATASA plainly legible.

No. 24. Obv. Standing figure : bull and trisul, RAJA RAMA DATASA. Rev. Trisul and other emblems.


No. 25. Standing figure, RAHU RAJASA.

No. 26. Standing figure, bull and snake : nothing legible.

No. 27. Broken, square, sitting bull : VASATU DATASA.

No. 28. Obv. Bull passing to left : SUVA DATASA. Rev. Not distinguishable.

Nos. 29 and 30. Not clearly distinguishable, but of similar type to No. 25. Inscription in No. 30, RAHU RAJASA.

Plate No. LXI. is of coins which were dug up in *Oojein*, and forwarded by Mr. BAX to Major OUSELY of *Sagar*, by whom they were sent to our Editor. Some of the same type and appearance in every respect were about the same time obtained by Dr. BURNS at *Kaira*, and will be found represented in the same plate. There is no inscription of any kind on any of these coins, excepting on No. 2 and No. 22, on which the word *Ujayina* is plainly legible in well formed letters of the oldest Pāli character. All of them present the appearance of greater antiquity than can be claimed by any other coins, which have hitherto been described. The four rings  a tree and garden, and mountain seem to be the distinguishing emblems, but as no description can equal the representation given in the plate, we deem it quite unnecessary to explain their appearance separately.

The coins from which the above plates have been prepared are still in deposit with us, and we wish it to be understood that we hold them at the disposal of the owners, who have only to indicate the manner in which they desire to have them returned, and we shall make a point of following their instructions in this respect.





ANCIENT COINS FROM OUJEIN.



VII.—Ancient Inscriptions.

We have very little room in this number for the further prosecution of the intention declared, of exhibiting in the pages of the Journal transcripts of all the numerous inscriptions, of which copies and facsimiles have been transmitted to us. But that we may not fail altogether to redeem the pledge thus given, we have selected some short ones.

I. Captain J. S. BURT of Engineers, now stationed at *Ghásipur*, has been so fortunate as to discover a fallen pillar at *Palladpur* on the banks of the Ganges in the *Zaminsa* perguna, round the centre of which is a short inscription in the No. 2 character. The shaft lies on the ground, more than half buried, about six kos south of *Ghásipur*. It is described by Captain BURT as a perfect cylinder of three feet diameter, polished and rounded for a length of twenty-seven feet, and with a rough base of nine feet, the whole length being thirty-six feet. Round the centre is an inscription of a single perfect sloka, to read which completely Captain B. was compelled to cause a trench to be dug underneath the shaft of the column. The sloka as read and explained by KAMALÁKÁNTA is as follows :

इह विपुल विजय कीर्ति : क्षत्रस द्युर्धर्म पावः सततदयित पार्थः
पार्थि-वानेकपावः विद्वदित पिहपञ्चाक्षे मसन्दोहपावः विद्वित इव
विधात्रायंभो जोकपावः ।

“Great, victorious, of high renown, the promoter of the virtue of Kshatris, always like the sons of KUNTI (YUDISHTHIRA, &c.), protector of many kings, for the honoring of his father’s memory practising many virtues, in his actions and conduct truly a fifth LÔKPAL divinity.”

From the manner in which the sloka ends with “LÔKPAL,” it is surmised that that must be the name of the sovereign in whose honor the inscription was written, but there is no date or other means of identifying it. The pillar is well worthy of the examination of the curious.

II. In closing this series of the journal, our acknowledgments are due to the more than common zeal, with which Captain BURT has collected, and the care with which he has made the facsimiles of a great variety of inscriptions. One valuable one containing the names of several new rajas was obtained by him from the vicinity of *Chatarpur* in *Bandelkhand*, and we hoped to have been able, with the assistance of the Rev. Mr. MALAN, to have given its translation in the past month ; but the failure of that gentleman’s eyes has compelled its transfer to other hands, and it remains to enrich the new series of the journal.

III. Another facsimile taken by Captain BURT from a temple at *Oodeypur* in February 1838, deserves also particular mention, not for its substance, which is merely a grant of no great antiquity by a *rāja* named *PUNYA PAL* of *Jagobates*, but because the date is given in three eras, one of which is new. It shows the *Sumbut* year of *VIKRAMADITYA* 1115, corresponding with 981 of *SALIVAHANA*, to have fallen in the year 446 of *ODDYADITYA*, therefore the *rāja* *ODDYADITYA*, from whom probably *Oodeypur* derives its name, lived in the year 670 of *VIKRAMADITYA* or about 614 A. D. This *rāja*'s name is not in the chronological tables of the *Sesodee*, or of any other dynasty. But the name of *DEVA DITYA* occurs, at about the period assigned for the *sra* in this inscription, and they may be identical.

IV. The next inscription of which we shall furnish a translation, is one often mentioned in the pages of this journal, viz. that of *Bageshar* near *Almora* in the province of *Kumaon*. This inscription was copied by Mr. TRAIL the late commissioner, but the copies proving defective, facsimiles were also obtained, from which the following transcript and translation have been made.

There are still several hiatuses, and especially towards the close, where the date will most probably have been. Failing this means of fixing the period when the *rājas* named in this inscription lived, we have now nothing but the appearance of the stone, and the character of the writing to indicate its probable epoch. In the present instance these are uncertain criteria, for the character, though ancient and in some respects peculiar, does not correspond sufficiently with that of other inscriptions or coins to afford a safe chronological guide. The inscription so far as it has been decyphered is as follows :—

१। स्वस्ति । श्रीमति देवदत्त देवदारदखिने इतंवाजेन्द्रं तिर्चमही
 पाठकमनेन । एवमनगरपनुपिदातसुरकरिणि निनूकनाविनतनप्रदाकं
 र र
 प्रबतपरदेवचरं पनुपासनासनंदेवं परमभट्टारकमहाराजाधिराज
 परमेश्वरश्रीभसन्तनदेवः तत्पदानुध्यानरवराज्ञी महादेवी श्रीवाग्देव
 रागिभा तस्यामुत्पन्नः परममहेश्वरः परमप्रत्ययः परमभट्टारकमहारा-
 जाधिराजः परममहेश्वरः खैरं खैरं ददौ कुक्षी नवकुक्षमुक्तिप्रतिपदं
 यां प्रतीकिकात्मासीत्तथाश्रीरपलिकायां श्रीवाग्देवदेवाय गन्धिपुष्पसु
 धूपदीपसमाज्येपनखंडस्फुटितं समरावनाय प्रतिपादितम् सुकीर्तिप्रचरं

पुनः कर्मवशाद्देवोऽयं असन्निवृत्तकर्मणा विद्यते ते ते ये उपरिनिक्षिप्त
 देवाय मन्त्रपुष्पादिकाः यस्यभर्ताप्रतिवद्धाउपरिनिक्षिप्तस्य च सर्वेश्वर
 ग्रामः तथाच प्रतोषिकासप्तप्रतिपादितं परमभट्टारकमहाराजाधि-
 राजपरमेश्वरजीवपरदेवः तस्य पुत्रः तत्पादानुध्यानरतराक्षी महा-
 देवी श्रीकल्याणदेवी तस्यामुत्पन्नः परममहेश्वरपरमवज्रवरेण्यः परस
 भट्टारकमहाराजाधिराजपरमेश्वरजीवकल्याणराजदेवः तस्य पुत्रः तत्प-
 दानुध्यानरतराक्षी महादेवी लज्जादेवी तस्यामुत्पन्नः परममहेश्वर
 परमवरेण्यः परमभट्टारकमहाराजाधिराजपरमेश्वरजीविभुवनराज-
 देवः कुशली जयकलभुक्तिकायां नायक्षेत्रं प्रतिवद्धं विचार्यत्रोदयसाङ्गं.

इहैव भूयामुपरिनिक्षिप्तदेवाय मन्त्रपुष्पदीपादिका ये ये
 ते ते प्रतिपादिता इति आसीत् किरातोतः तस्य पुत्रेण ग्रामं वज्रसंवन्यः
 इहाच प्रतिपत्तव्यं देवतोद्देशेन गावियपिंषपयरातदोखरियं प्रतिवद्धं
 त्रोदयसाङ्गं भूयामु मूर्धं उपरिनिक्षिप्तदेवस्य च प्रतिपादितं अवरोप्या
 विध्वजपुत्रः पुनः रोच वज्रवरेण्यप्रतिवद्ध भूमिद्रोक्षैर्षं सोऽहं
 तत्र तत् तत् । विधादूहप्रस्थ संवज्रवत् ११ तथावज्रेश्वरप्रति-
 वद्धभूमिद्रोक्षैर्षं ववृषामुच्छादेवी पूर्वतः भूमीप्रस्तचतुर्दशः

१०

तामेव भूयामु? उपरिनिक्षिप्तजीवामहेश्वरदेवाय

उपभरव विभित्तिराक्षीमहान्ति वत्सरात् सक्तजामर
 प्रितिततुलमनुज्ञावज्रभक्तिभावभरादरोमनितोत्तमाङ्गः अक्षिनिष्ठ
 गुण्डकिरीटनिवज्रकोटिकोटिकोभैकावनमङ्गोदकप्रदीपदीप्तदीधितिभा-
 तनहारलकमजामलविपुलवज्रवकिरवक्षेत्रासारसारितार्त्रेवविशेष
 मोधिधनतमभोगिमखविद्योतजटाजुटस्य कुशकतमोधूर्जटेः प्रसादात्
 निमभुजोपाजितजर्जित्यः निर्जितरिपुक्कलधौतौषप्रकाशः दयादाक्षिण्य
 सत्त्वसत्त्वक्षीणसौम्योदायार्थमाभीर्षमर्थादाचरिचान्दर्वचार्यव वरिमुक्कम
 बाधनंजतशरीरः कृतायुधातिसत्वेन विषयचतुरः कृताभरप्रगीत
 श्रीतिथीगन्धगासराक्षीप्रतिचरवज्रकमजकमजामसेनार्थमूर्धः श्रीविश्वरू
 देवः तस्य पुत्रः तत्पादानुध्यानरतराक्षीमहादेवी श्रीदासदेवी तस्या

His son was KHARPARA DEVA the king of kings, respectable and wealthy; in his wife ——— who was much devoted to him was born APHERHAJA; who was most wealthy, honorable and learned. Of his queen LADHDHA DEVI who loved her husband dearly, was born TRI'SHU'VANA rāja DEVA who was active, rich, honorable and intelligent. He (*Tribhāvana rāja*) gave two *dronas* of a fruitful field named *Nāya* in the village of *Joyakulabhūktika* to the above god, and also ordered the fragrant substances, &c. produced in it, to be employed in the worship of the same god.

It is also worthy to be known, that he was an intimate friend of the son of KIRATA, (perhaps a hunter,) who gave two and a half *dronas* land to the above mentioned god and to the god GAMBIRAPINDA.

Another son of A'DHIDHAJA gave one *drona* of land to the god BAKIRAKE, and moreover caused a grant (*Sāsanan*) of two *bīgas* of lands to be engraved on a stone in the Samvat year 11. He also gave one *drona* of land to the god BAGHRESWARA and fourteen parcels of land to CHANDALNU'NDA DEVI and he established a *Prapa*, (i. e. trough or place where water is distributed,) in honor of the former.

All these tracts of land have been consecrated to the god BAGHRESWARA for his worship.

There was another rāja named NUNVARATA who was possessed of compassion, sincerity, truth, strength, good dispositions, heroism, magnanimity, intellect, politeness, and good character, of a charming person, adorned with morals and with several eminent qualities, active in conquering by the force of his bow held in hand, and born for worshipping the lily feet of the owner of *Nandana* and *Amarāvati*, i. e. INDRA, who acquired fame by the force of his arms, through the favour of DURJANI (or SIVA) who wears *Jotājyoto* (or matted hairs), on his head, tied with the pearls of his crown resembling a crescent, and illuminated with the purest water of *Ganga*, which confers ten million beauties, which *Jotājyoto*, or head of hair, robs other radiant substances of their lustre by its many large, clear, and beautiful jewels, and bright keśara flowers on which play the black snakes. He (the rāja) subdued all his enemies, and his colour was like gold, his fair body was always bent down with respect for the worship of all gods, daityas, men, and learned persons, and his fame is sung every where, as derived from the performance of *Yagyas*.

His son ISTOYANA DEVA, born from the chief of his queens DASU' DEVI who loved him dearly, was a king of kings, rich, respectable and learned. His son LALITA SU'RA DEVA was born of his wife DHARĀ DEVI, who was much devoted to him, who was also

a king of kings, wealthy, respected, intelligent, and in all respects a hero. His son BHUDEVA DEVA was born of his wife LĀYA DEVĪ who loved much her husband. He also was king of kings, a zealous worshipper of BRAHMA, an enemy of BUDHA SRAVANA, a lover of truth, rich, beautiful, learned, continually engaged in religious observances, and a person near whom KALĪ (the yuga) could not approach; whose eyes were beautiful as blue lilies and quick, the palm of whose hands resembled young twigs, whose ears were frequently troubled by the sound of the jewels of the crowns of rājas who bowed before him, and whose great weapon destroyed darkness, whose feet resembled the colour of gold, who granted pensions to his favorite attendants.

He——the remainder defective.

N. B.—This inscription is supposed to be about 1500 years old, but, as before stated, the date is conjectural. There are faults of grammar in the Sanskrit, for which the Pandit who drafted the inscription is answerable.

VIII.—Mr. KITTOE'S tour in Orissa, continued from page 829 of September, 1838.

On the following morning (the 16th March), I proceeded to *Atturva*, a large village on the banks of the Brahminee river, the greater part of the way was through very dense jungle, with some small patches of cultivation interspersed; I met with only one village in which there were many large herds of buffaloes, and other cattle; cultivation is also extensive. I here observed a method of tilling the land quite novel to me; the fields are dug with long and heavy crowbars, each cled as it is turned up, is bruised with the bar, and thus prepared for the seed without using a plough; indeed the stiff nature of the soil, would not admit of its being ploughed in the dry seasons. This practice I found to prevail throughout the valley of the Brahminee, which tract is very fertile.

The distance travelled this morning must have been nearly fifteen miles. Nothing new presented itself at *Atturva*, where the bed of the river is about half a mile wide, the water at this season occupying but an eighth of that space: being very shallow it is only navigable for small canoes.

17th March, Camp *Nadurra*. This is a large village on the banks of the river about thirteen miles from the last camp; it may however be much less in a direct line: my guides purposely took me by a very difficult and circuitous route, inland from the river along the banks of which I ought to have travelled; such is the wiliness of the Ooreyaha,

their object being to decoy me from the site of the rich lands which I should otherwise have seen ; my companion Mr. B. came by the latter route, while I was completely at the mercy of my guides, having a palkee for my only conveyance. I however walked the greater part of the way, and passed several villages, all of which appeared to possess much cattle ; the pasture land is very rich.

The chain of low and isolated hills to my left (south) came here nearer to the river ; the ground undulated considerably, and in many places I met with extensive beds of shingle containing the debris of rocks, common in the more elevated mountain chains of *Hingool*, *Talcher* and *Rehrakhol*, with which is mixed much jasper, laterite and iron stone conglomerate.

A great variety of small fish were brought, among which I observed some species quite new to me, of a couple of which I took drawings.

In the evening I was visited by an intelligent ascetic, from whom I learned much concerning the coal beds in *Talcher* and its vicinity, particularly one called *Hingolai Thakooranee* ; indeed I am entirely indebted to this individual for its discovery, no pains being spared to mislead and deter me from going beyond *Talcher*.

On the 18th I continued my march, and was again led by a roundabout path to a small hamlet on the river side called *Kumlung*, a short distance beyond the village of *Mungulpur* : it is on the boundary line between *Talcher* and *Deknadi*.

The bed of the river here is about a furlong and a half wide, the water flows under the opposite bank where there are granite rocks ; it is still, and very deep ; I found a great abundance of coal scattered over the sand, which removed the doubts I had hitherto entertained of its existence in this neighbourhood.

I was informed that the navigation of the river from *Talcher* to as far as *Kuryparead* is considered dangerous for large boats, which are consequently not brought higher up than that place, where the first rocks occur ; therefore should the coal fields ever be worked, it will be necessary to remove these rocks, which might be done without much labor or expense, there being few that I should consider really dangerous.

19th, Camp *Talcher*, *Patna*. Marched this morning at an early hour ; the distance was about five miles over an undulating country with little jungle but much high grass. There were few villages and the cultivation very limited. The soil appears remarkably poor with much gravel mixed with it ; the sandstone rock predominates : there are however some large masses of granite protruding through the soil, having a very curious appearance.

I encamped on the banks of the river, about half a mile east of the town and *Gurh*; the latter is on a sandstone rock washed by the river, the former is contiguous to it on the south side, extending for half a mile or more. The *Gurh* is a stockade surrounded on three sides by a deep ditch; within is a long street reaching from the southern wicket to the chief entrance of the rāja's residence, the principal buildings of which are of masonry. All the smaller out-houses had been burned to the ground, together with the granaries a few days previous to my arrival.

The rāja with his sons paid me a visit in the afternoon. I was very agreeably surprised to find him a shrewd intelligent old man. He has travelled over the greatest part of India, having performed pilgrimages to *Ramesseram* near *Ceylon*, and to *Budhrath* in the *Himalayas*. He promised every assistance towards furthering the discovery of coal fields. On his taking leave I presented him with a musical box with which he was much delighted.

In the evening I returned the rāja's visit; he showed me his *Gurh* which is in a very dilapidated state, as an excuse for which he said that there was no occasion for strongholds, while he lived under British protection. He dwelt much on his poverty. After taking leave of him, his sons accompanied me to a nullah about half a mile to the westward, and called *Billajaores*, in the banks of which, at about 400 yards from the river, seams of coal are apparent; they appear to abut on the sandstone rock, and are a very few feet below the undulating surface, which is alternately clay and shingle. The seams vary in quality and thickness, and are curved nearly parallel with the undulations of the superstrata. I attempted to sink a shaft, but was prevented by coming upon a hard rock of a bluish color containing mica, coal and fossil plants. I blasted the rock, which proved twelve and a half feet thick, beneath it was a stiff grey clay containing coarse sand and mica.

The following day I again visited the coal beds, and lighted a large fire, to the amusement of the natives who had never seen stones ignited.

The next morning I proceeded to the village of *Mungulprasad* about fifteen miles west of *Talcher*, under which is a dry torrent called the *Sungurra*, in the banks of which coal beds, averaging from five to fifteen feet, are exposed to view alternately on either side for one or two miles distance: there are several descriptions of coal, specimens of all of which I brought away with me.

From this spot I retraced my steps towards the plains, leaving *Tal-*

after several miles to my left, and passing through a part of the *Ungbol* territory : the third day, the 24th, I reached the village of *Naghamar* on banks of the *Brahmince*, about two miles east of *Nadurva*. There is a very ancient temple here, dedicated to *Nagnath* : the name of the village is a corruption of this title. There is an inscription round the lingam placed within the temple which is very small. I was not permitted to see it, and was informed that the greater part of it was obliterated.

From *Naghamar* I proceeded the following morning to *Chundaspal*, a village surrounded with the richest cultivation, and close on the banks of the river, on the alluvial deposits of which there is extensive tobacco cultivation ; it supplies the markets of *Cuttack*, *Badradik*, and *Balasore*.

My next march was to the large town of *Kassepar*, likewise on the banks of the river : the cultivation is equally good. Many merchants reside here ; their trade is in timber, cotton, tobacco, oil seed, and other products of the forests. I remained during the heat of the day at this place, and in the evening proceeded by dark towards Calcutta. I arrived on the fourth day after having travelled no less than miles from the 28rd of February to the 30th of March. I however feel amply repaid for the fatigue endured, first, from having been enabled to reinspect the *Dhauli* inscriptions ; and, secondly, in having been so fortunate as to discover such extensive fields of coal, above which iron ore is equally plentiful. It is to be hoped that the day is not far distant when these valuable minerals may be turned to good account.

Metereological Register kept at the Army Office, Calcutta, for the Month of December, 1838.

| FEBRUARY, 1844. | | | | | | | | | | | | | | | | | | | MARCH 4 P. M. | | | | | | | | | | | | | | | | | | |
|-----------------------|----------------|-------------|------------|--------|----------------|------------------|-----------|------------|--------|----------------|------------|-----------------------|------------|--------|----------------|-------------|-----------|------------|---------------|------------------|------------|-----------|------------|----------|----------------|--|--|--|--|--|--|--|--|--|--|--|--|
| Atmospheric Pressure. | | Hygrometry. | | | | Aqueous Tension. | | | | Weather. | | Atmospheric Pressure. | | | | Hygrometry. | | | | Aqueous Tension. | | | | Weather. | | | | | | | | | | | | | |
| Old Barometer. | Height at Foh. | Wet bulb. | Dew-point. | Therm. | Diurnal Range. | Barometer. | Wet bulb. | Dew-point. | Therm. | Diurnal Range. | Barometer. | Wet bulb. | Dew-point. | Therm. | Diurnal Range. | Barometer. | Wet bulb. | Dew-point. | Therm. | Diurnal Range. | Barometer. | Wet bulb. | Dew-point. | Therm. | Diurnal Range. | | | | | | | | | | | | |
| 30.88 | 38.015 | 75.6 | 77.5 | 74.5 | 10.4 | 10.1 | 88 | 59 | 30.969 | 39.889 | 78.7 | 13.3 | 11.3 | 76 | 49 | 59 | 49 | 59 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.84 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.87 | 37.976 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.87 | 37.976 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30.88 | 38.088 | 74.5 | 77.5 | 73.5 | 9.1 | 7.0 | 87 | 58 | 30.961 | 39.881 | 78.7 | 13.3 | 11.7 | 75 | 48 | 58 | 48 | 58 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

INDEX.

| | Page | | Page |
|---|------|--|----------|
| ANTIOCHUS the great, discovery of name of, | 155 | CSOMA, A., on Buddhism, | 142 |
| Artouik, species of, | 732 | —, on works of Tibet, .. | 147 |
| Asiatic Society, proceedings of, 87, 167, 223, 364, 456, 557, 663, 742, 829, 915, | 983 | Cyprinids, six new species of, .. | 941 |
| Bactria, coins and relics of, | 1047 | Daud Patras, origin of, | 37 |
| BASTEN, J. H., visit to the Niti pass, by, | 310 | DRUMMOND, Capt. H., on copper mines of Kamaon, | 834 |
| BAYSON, W. H., on land and fresh-water shells, | 311 | Durga, sketch of the temple to, .. | 818 |
| — on the affinities of Galathea, | 420 | EDGEMORTH, M. P., botanico-agricultural account of the Sikh States, .. | 751 |
| BLAKE, Capt. E. N., on the Hissar pirates, | 976 | EVANS, Dr. G., on a species of Artois, | 722 |
| Botanico-agricultural account of the Sikh States, | 751 | —, on the New Zealand caterpillar, | 727 |
| Breath, heat observed in, | 207 | EVANS, R. R., on the revolution of the Seasons, | 192 |
| —, spontaneous heating of, .. | 1014 | Galathea, affinities of, | 420 |
| BROWN, Capt. W., on temple at Hissar, | 429 | Geography of the Kasia mountains, of part of the Mergui provinces, | 1027 |
| Buddhism, different systems of, .. | 142 | Giraffe, fossil traces of, | 646 |
| Bakhara, weights, measures and coins of, | 892 | Girnar, inscription from, | 219, 845 |
| BURNES, Capt. A., on the Reg-Ruwan, | 324 | Gold washing, | 671, 678 |
| —, on the Shah-pôsh, | 325 | GRIFFITH, W., on caoutchouc tree, .. | 122 |
| —, on Yan specimens of coal, | 846 | GUBBINS, C., on Salumber pill, .. | 363 |
| BURT, Capt. T. S., inscriptions from the Sanchi tops, | 562 | HAMMER, J. Von, a translation from the Mohit, by, | 757 |
| —, on Delhi Iron pillar, | 629 | HANNAY, Capt. S. O., on the Moa Morah sect, | 671 |
| Cabul, weights, measures and coins of, | 892 | HELPER, Dr., on Tenasserim coal, .. | 741 |
| Caoutchouc tree, report on, | 122 | —, on animal productions of the Tenasserim provinces, | 645 |
| Caterpillar from New Zealand, | 787 | Hexaprotodon, genus of Hippopotamus, | 1028 |
| CAUTLEY, Capt. P. T., on fossil Giraffe, | 558 | Hissar, ancient temple at, | 429 |
| Chao, expedition of, | 93 | HODGSON, B. H., on the pheasant from Tibet, | 643 |
| Coal level in the Indian fields, | 65 | Hurricane of the 5th April, 1838, .. | 473 |
| —, table of, | 197 | HUTTON, Lt. T., on the Himalayan Vulture eagle, | 20 |
| —, discovered in the Tenasserim provinces, | 701 | —, on land and fresh water shells, | 311 |
| —, Bidjeogurh, | 839 | Indo-Chinese languages, | 56 |
| —, ten specimens from Capt. BURNES, | 848 | Inscription from Goruckpore, .. | 53 |
| —, beds of Assam, | 948 | —, from Bakerganj, | 40 |
| —, of Sylhet, | 959 | —, from Iskardo, | 39 |
| —, of Behar, | 964 | —, on Jain images, | 51 |
| Cochinchina, geography of, | 317 | —, on Girnar rock, 219, 845 | |
| Coins of Cabul and Bakhara, | 892 | —, on Arracan bell, | 287 |
| — and relics of Bactria, | 1047 | —, Girnar, and Dhauli, .. | 334 |
| — ancient Hindu, from Jyampur and Oojein, | 1052 | —, from Aewastama, | 454 |
| Cooch Behar, history of, | 1 | —, on Brahmanwara slab, .. | 657 |
| Copper mines of Kamaon, | 934 | —, from Sanchi tops, | 562 |
| | | —, on Delhi iron pillar, .. | 629 |
| | | —, on Tamba Patra, | 736 |
| | | —, near the Temple of Rudradeva at Warangal, | 901 |
| | | —, on Tamba Patras from Kaira, | 908, 966 |

